Railway Age

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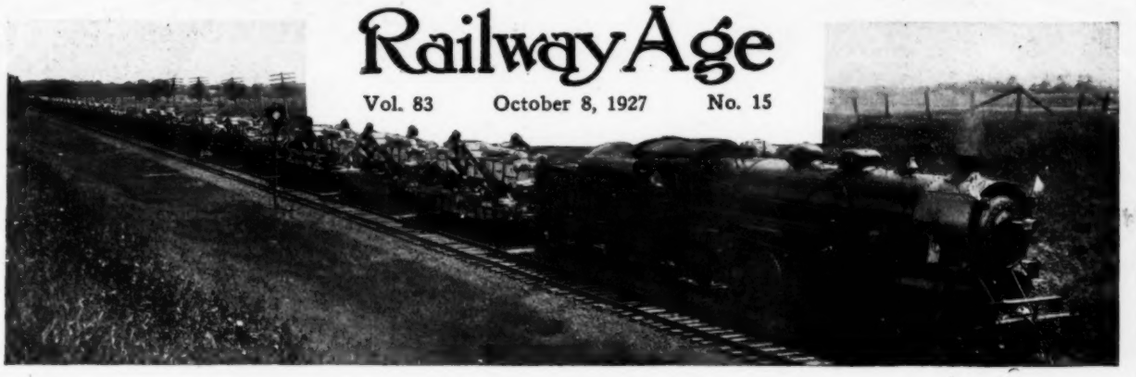

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Railway Age

Vol. 83, No. 15 October 8, 1927 Table of Contents Appears on Page 5 of Advertising Section

Treated Ties on the Northern Pacific

IN an article in the *Railway Age* of September 17 the statement was made that the Northern Pacific railway is not using treated ties. This statement was erroneous. The Northern Pacific has been using treated ties for many years. It has had two creosoting plants in operation for nearly 20 years—one at Brainerd, Minn., and one at Paradise, Mont. Sixty per cent of the ties in its main line tracks and about 56 per cent of those in its branch line tracks are treated.

Iron Horse Fair Closing Advanced to October 15

THE Baltimore & Ohio's Fair of the Iron Horse is succeeding far beyond the most optimistic hopes of its promoters. Up to and including Wednesday, October 5, the twelfth day of the exposition, 630,000 people had attended—an average of 52,500 a day. Public interest in the romance of the railroad is, quite apparently, just as alive today as ever, and required only something tangible on which to focus. Spectators leaving Halethorpe are invariably enthusiastic and return to their homes and places of business to convince thousands of others that they too must see this great spectacle. It is gratifying, therefore, to learn that the closing date has again been advanced—this time until October 15—and that the pageant will be shown twice a day hereafter to give additional thousands an opportunity to witness it. It is not expanding the bare facts to say that this is a railroad exposition such as has never yet been shown in this country—a museum which springs into life before the spectator and hence makes it easy for his imagination to carry him back to railroading as it was 25, or 50, or 100 years ago. We repeat our opinion, expressed before the exposition opened, that no railroad man who can conveniently arrange to see the fair at Halethorpe will fail to find his time well-spent. To paraphrase a famous advertising slogan: "Ask the man who has seen it."

Continued Loss of Passenger Business

THE hope that railway officers began to have some time ago that the decline in passenger business had about stopped has been very completely blasted by the experience of recent months. The decline in passenger business thus far in 1927 has been relatively greater than in either 1925 or 1926. In the first seven months of the year the decline in total railway earnings was almost $61,000,000, and of this loss almost $33,000,000 was due to a reduction in passenger business. The loss in July, the last month for which statistics are available, was $6,260,000. The last year in which passenger earnings showed an increase was 1923. They showed a reduction of 6.2 per cent in 1924; 1.7 per cent in 1925, and 1.5 per cent in 1926; while the loss in the first seven months of 1927 was 5.4 per cent. Relatively, the largest loss has occurred in the southern region, where it has amounted to $16,000,000, or about 18 per cent. The loss of the eastern lines has been about $8,000,000, and that of the western lines also about $8,000,000. For the first time in some years there has been a small decline in travel in sleeping and parlor cars, but most of the loss has been due to a decline in travel in day coaches, which are especially subject to the competition of the automobile. What to do to save passenger business remains one of the principal unsolved problems of the railroads.

The A. F. of L. Convention

THE executive council of the American Federation of Labor in its annual report to the membership offers some advice concerning the establishment of additional labor banks. This advice may be succinctly summed up in a single word—"Don't!" The report calls attention to the experience of the Brotherhood of Locomotive Engineers in the banking and investment business and states that "experience in this field has now sufficiently cumulated to make a solemn warning imperative." The report continues with the admonition that such banks should be doubly safeguarded not solely because they are banks but because they are known as labor banks. This note of warning, it seems, is needed. There is no fundamental objection to labor's participation in business enterprise, but the savings of small investors ought not to be jeopardized by being intrusted to novices. In other words, the chief trouble with labor banking so far seems to have been its desire to run before it really learned to crawl. Opportunist tactics and reliance on the main chance, which generally form the mainstay of union strategy in dealing with employers, cannot compare with sound economics and experience in finance in the business of banking. Evidence of some dissatisfaction with opportunism as a policy in industrial disputes is also evidenced by the executive council in its announcement that henceforth it will rely more on statistics than upon strikes in its effort to maintain satisfactory wages and working conditions. This is encouraging news if the council really means it seriously. A large proportion of the strikes which have occurred in this country in the past have come because a certain union—perhaps only a local—felt that a strike would succeed, and strikes have been as common, perhaps more so, among $20-a-day men, as among those who earn $5 a day or less. Now it would appear that the walking delegate may give place to a walking statistician. Whether such a condition may actually ever come to pass is, of course, problematical. It is a step toward industrial peace, how-

ever, when such a policy begins to exist, even if only on paper. If the higher officers of the federation can convince themselves of the necessity of a scientific, rather than an opportunistic, viewpoint when industrial disputes arise, then there is a chance that the idea may eventually percolate down through the ranks.

Direct Current Power from Rectifiers

MERCURY-ARC rectifiers for changing alternating current power to direct current power have been investigated during the past year by the power generation and conversion committee of the American Electric Railway Association. Small glass enclosed rectifiers have been used for a long time for small power requirements such as charging batteries, but it is only in recent years that the large power rectifiers have found application in this country. Most of these applications have been made in the street railway and suburban railway field, with four in service on the Illinois Central and one on the Long Island as exceptions. A questionnaire was sent by the committee to 23 owning and operating companies and a summary of the replies includes interesting data and opinions. The rectifiers have the inherent advantage of being more efficient than rotary machinery, particularly at voltages above 600, and according to the report there seems to be no difficulty experienced in parallel operation of rectifiers with converters. Some trouble has been experienced with internal flashovers. These flashovers shut down the rectifier, but do no damage to the machine and it is the concensus of opinion that this difficulty is only temporary. Automatic operation has been reported as fairly satisfactory as far as the rectifier itself is concerned. Trouble has been experienced, however, with accessory equipment of various kinds. On the other hand, one operator is of the opinion that the rectifier will eventually replace the synchronous converter for railway work. It would appear from the report that the rectifier should in the future provide a means for reducing somewhat the cost of direct current power for traction purposes. When fully developed it may also serve as a desirable means for supplying direct current power to shops for the operation of cranes, variable speed motors driving machine tools and other equipment which can be operated to advantage by direct current.

Visitors from Abroad

RAILWAY and railway supply visitors from abroad are not at all uncommon in these days and their comments in many instances are most interesting and enlightening. For one thing, those from Great Britain and Europe are amazed at our great distances and areas and at the size and capacity of our railway facilities and equipment. They are equally surprised at our rough tolerances, particularly in locomotive and car construction. Most of the foreign mechanical engineers, for instance, almost shudder at the crude way (to their eyes) that we fit our cylinder packing, and are quite likely to express themselves most forcefully as to the resulting waste and inefficiency. The more charitably minded critics from abroad, realizing our great natural resources and the immensity of our transportation problem because of the great distances and the low density of population in many extended areas, suggest that our first task was to develop the transportation system on a sufficiently large scale to provide the required service and develop the different sections of the country, but that now is the time that we should be thinking of those refinements in design and workmanship which are being followed in Great Britain and Europe. The impression of the gigantic scale on which we do things was pictured by a recent visitor when he commented upon the icing station for refrigerator cars at Council Bluffs, which he said was at least a mile and a half long. "Just to think," he said, "of these wonderful facilities for handling a product which is not really needed." Has the time not come, however, when we can well afford to give more and more attention to some of those details, the roughness or crudeness of which is so thoroughly out of accord with the refinements practiced abroad?

Bus and Truck Regulation

THE question of whether or not legislation to regulate interstate motor bus and truck carriers should be enacted will unquestionably be an important issue in the Congress which will convene this winter. Chairman Esch of the Interstate Commerce Commission has indicated that the report of the Commission on its findings in the motor transport investigation which it instituted last year will be rendered at the opening of the session. It is probable that the commission will recommend the regulation at least of interstate buses, and perhaps also of trucks. The regulation of buses and trucks has not appeared recently to be the burning issue in the minds of the railways that it was several years ago. Certainly, less is being said about it. The need for the regulation of interstate carriers operating on the highways still exists, however, not only in the interests of the public and of bus and truck operators but in the interests also of the railways. The railways will be well advised to overlook no opportunity to lend their support this winter to the passage of federal legislation regulating the interstate bus and truck carriers.

Motive Power on Branch Lines

IT has long been the practice for American railroads to make use of the motive power replaced by their purchases of new locomotives of constantly increasing capacity, on branch lines or for relatively light traffic on the main lines. For some years, however, it has become increasingly evident that the requirements for the traffic on branch lines or the relatively light traffic on main lines have not advanced in proportion to the requirements for the heavy main line traffic, either passenger or freight. The result is that much of the motive power being set back by the latest acquisitions of heavy freight and passenger locomotives is of far too great capacity to handle the lighter or secondary traffic with a satisfactory degree of economy. Not only is this lack of economy attributable to excessive fuel consumption and maintenance cost, but in the case of branch lines the effect on track is also involved. In branch line passenger service gas- and Diesel-electric self-propelled cars are meeting the requirements in many places. They do not, however, meet all of the requirements, particularly where freight must be regularly moved. Modernization of old locomotives of light weight and capacity has served to meet such requirements in some cases. In others, there is undoubtedly a need for diverting some of the attention being given to the development of new locomotives of the utmost capacity to the development of equally modern locomotives to meet the requirements of light traffic. There are numerous cases where the question may well be asked whether the loco-

motives replaced by modern high capacity motive power might not better be retired and modern motive power of light capacity built to suit to the requirements of the secondary service, rather than to continue to operate these locomotives in a service for which they are not suited.

The Ultimate in Tie Preservation

IN the early days of timber preservation in this country it was contended that the life of ties could be extended by this means to at least twice that of timber untreated. As this practice has grown the soundness of this claim has been demonstrated so generally that it is no longer open to question. With this development has come a realization of the economic necessity for the more complete protection of the timber against mechanical destruction by rail cutting, spike killing, etc., if the full benefit of the protection against decay is to be secured.

However, few men in this country have appreciated the possibility of securing still further life from treated ties after mechanical deterioration requires their removal from main tracks. For this reason particular interest attaches to a statement made by George J. Ray, chief engineer of the Delaware, Lackawanna & Western, before the recent convention of the Roadmasters' Association in Buffalo, to the effect that of the 120,000 to 125,000 treated ties that have been removed from the main tracks of that road since treatment was started in 1910, 99,000 have been placed in side tracks, where Mr. Ray believes that they are good for 15 or 20 years more service.

Although the service secured from the treated ties prior to their removal from main tracks affords ample justification for their treatment, the possibility of turning them over and replacing them in side and yard tracks for further service affords added economy, for Mr. Ray's experience indicates that it is going to be possible for his road to secure its side track ties in the future exclusively from those discarded from the main tracks. While new to the United States, this practice is not novel, for it has long been followed in England and other European countries where, after a life of 15 to 20 years in main tracks and a similar life in side tracks, a large portion of the ties are still sufficiently sound to warrant their use as fence posts.

The use of ties in the manner suggested by Mr. Ray is possible only when they have been so thoroughly treated that they are immune to decay. Still more important, their continued use presupposes that they are sound and of adequate cross-section in the first place. While there are still some exceptions, the necessity for thorough treatment is quite generally realized today and skimping in this respect is not widespread. The same condition is not as universal, however, with reference to tie quality. Marked improvement has been made in this direction within the last few years, but the ties purchased and treated by many roads are still deficient as to size and, not infrequently, as to soundness. It is self-evident that results of the character described by Mr. Ray cannot be secured with ties that are deficient in size or quality to begin with. There is no short cut to this result.

It can only be secured by thorough and consistent measures throughout every step in the production, handling and care of the tie from the time the tree is felled until the timber is finally removed from the track.

The Upper Mississippi Waterway

ALTHOUGH Congress has indicated a desire to promote the development of inland waterways and has cast a paternal eye on the barge lines now operating on the Mississippi river, it has not seemed to be the intention to divert traffic from the railways, where they are fully capable of performing complete service, particularly when the barge line concerned cannot operate except at a loss. The Interstate Commerce Commission apparently does not concur in this view of the situation, for in the case of the Inland Waterways Corporation versus the Chicago Great Western et al, it has issued an opinion, so phrased as to carry the weight of an order, that through rates should be established between Chicago and the Twin Cities in connection with the barge line via Dubuque, at a 15 per cent differential under the rail rates.

The four railways party to the complaint, including the Chicago, Burlington & Quincy, the Illinois Central and the Chicago, Milwaukee & St. Paul, as well as the C. G. W., presented a clear-cut defense before Attorney-Examiner John H. Howell, who had presided at all barge line hearings concerning the lower river. Since Mr. Howell decided each of the previous cases in favor of the barge lines, it may be presumed that he is at least not prejudiced in favor of the railways; yet, he recommended unqualifiedly that this complaint be dismissed. His report summarized the situation as follows:

"The barge line is not interested in reasonable rates, but only in rates made sufficiently lower than the existing rail rates to enable it to secure traffic. Giving full consideration to the desirability of fostering water transportation to the maximum degree consistent with sound economy in transportation, the question arises whether the proposed operations of the barge line will be economical. In determining this, the evidence presented by the barge line is not helpful.

"From the point of view of the rail carriers, the effect of the barge line's proposals is that they maintain their facilities to the same extent as at present; that they continue to handle the traffic, which because of its nature or because of the lowness of the rates, is not desired by the barge line; that during the winter months, when transportation conditions are the most difficult, they handle the entire volume of traffic, and that on traffic interchanged with the barge line they accept divisions, which appear hardly adequate for the service they would be called upon to perform."

The commission attempts to explain its rejection of its examiner's report by citing the amount of money various interests have expended to establish this barge line. This seems hardly pertinent to the question at issue, for the mere fact that certain municipalities, in an excess of civic zeal, have spent money foolishly affords no ground for the Commission doing an injustice to the railways. The testimony of the carriers showed that the proposed divisions will not yield the rail lines sufficient revenue to pay for their part of the service and will divert traffic from the carriers which they would not be able to recoup. This will diminish the carrier's earnings at a time when none of the roads involved is earning a fair return on its investment. A study made by the Chicago Great Western during a three-months' period showed that this company received $48,084 for the carload and less-than-carload traffic involved in the proposed joint rate, while under the interchange asked for only $19,527 would accrue to it for the haul from Chicago to Dubuque, or $28,557 less than it had been earning, and for a year this loss would approximate $100,-

000. On the other hand, it could effect no reduction in service as the trains would have to continue to the Twin Cities with reduced tonnage. The other railways involved will suffer proportionately.

If there were some impelling national or even relatively local reason for all this, the situation might be borne with more equanimity, but a thorough search reveals no such reason. The railways, which can ill afford it, are compelled to contribute to the support of an enterprise which is foredoomed to failure, and which can only be maintained by large government subsidies, that must, in the end, be produced by the taxpayers.

Economic Studies of Signaling Can Be Made More Effective

BEFORE an installation of automatic signals is authorized a railroad management should determine the operating economies which can be realized. Recognizing this and also that a well prepared and easily interpreted engineering report are of great value in "selling" operating and executive officers to the economic advantages of automatic signals, Committee I, Economics of Railway Signaling, of the Signal Section, A.R.A., presented an outline at the recent Montreal meeting showing the principal operating factors to be studied in preparing an engineering estimate of the economies which can be effected by automatic signals. This committee drew up also a similar outline to set forth the economies possible through the use of interlocking facilities.

Certain items in this outline merit more detailed reference. First the operating savings brought about by increasing the average speed of trains are pointed out, then those arising from the reduction in the number of locomotives, cars (including per diem), telegraph operators, train orders, manual block stations, and collisions, together with the further savings due to remotely-operated switches and the delayed installation of additional tracks. After thus arriving at the gross savings, the outline next presented the first cost of the installation, properly divided to show the net additional investment to capital account and that chargeable to operation. Here the committee touched upon one of the greatest stumbling blocks in making railway capital improvements, the operating expense to be incurred in retiring existing facilities. Following this is the net annual cost of the maintenance and operation of signaling facilities which, when subtracted from the gross operating savings, gives the estimated net saving per year. Again the outline distinguishes between the total initial expenditure and the portion of it charged to capital account, when the per cent return on the money to be spent is figured.

In other words, the railway executive can weigh the possible savings thus outlined against those expected from other projects seeking attention and can make his decision intelligently and quickly. For this reason the committee's efforts are particularly commendable and should pave the way for more valuable reports on contemplated signal improvements. While the benefits of signaling will be extended to more lines of road in the future, the rate at which these facilities will be put to work on additional mileage will depend to no small extent upon the degree to which proper operating and engineering studies are made of the economic possibilities of this means of "keeping trains moving."

The Unused Sidings

WHILE traveling on a double-track division on a trunk line recently, a passenger remarked casually that, "freight business must be light for the rails of the passing sidings are rusty and many of these sidings are filled with empty cars." A railroad officer at once replied that the reverse was true, for the number of loaded cars handled in the preceding week was ten per cent greater than in the corresponding week of the previous year. He then went on to explain that the through freight trains were now kept moving on the main track and that the idle passing tracks had not been used much for three or four years.

These passing tracks hold 85 cars while train lengths have recently been increased to 110 to 125 cars. Operating officers are therefore forced to keep the tonnage freight trains on the main tracks and run the passenger and faster freight trains around them against the current of traffic. In order to facilitate such movements, facing point crossovers have been installed at a number of interlocking plants. Automatic block signals, which have been in service for several years, provide protection for the normal direction of traffic on each track while reverse movements are made on train orders. It is anticipated that the next improvement will be to add track-circuit-controlled manual-block signals to direct reverse movements by signal indication.

The adoption of this method of either-direction operation on both tracks was due in this case to lack of adequate passing tracks. However, the results have been so satisfactory in eliminating train stops and reducing delays to heavy trains that the shortage of passing sidings has proved a blessing in disguise. Although the same method of either-direction operation has been used for some time on other roads, the road under discussion was reluctant to adopt it. Other roads with traffic that may be handled by either-direction operation with signal protection, may well investigate these possibilities before authorizing expenditures for lengthening sidings or providing additional main tracks.

The Railroad Centenary and Public Regulation

THE attendance at the Baltimore & Ohio's centenary exhibition and pageant have afforded illuminating evidence regarding the public's interest in the railroads. The attendance on the opening day was not quite 40,000. Three days later it was almost 70,000, and in the first nine days it amounted to almost a half a million. Apparently everybody who attended told his friends in convincing terms that it is a good show. Those who have walked through the buildings and around the grounds, and sat in the grandstand during the pageant, can testify to the practicability of putting on a railroad show from which people of all ages and from every walk of life will derive instructions and entertainment.

When it is so plainly worth while for one railroad to invite the public to participate with it in the celebraton of its centenary, it seems more clear than ever that it would be worth while for all the railroads and affiliated interests to invite the public to join with them in celebrating the closing of 100 years of railroad transportation in the United States.

The most important event of the eighteenth century was a political one—i.e., the revolution which resulted in the establishment of democracy in the United States

under our federal constitution. The most important event of the nineteenth century was an economic one—i.e., the beginning of the development of railroad transportation. The political, economic and social history of the world during the last century has been widely different from what it would have been without the railroad. In no other country has railroad development been on such a vast scale or produced such stupendous effects as in the United States. It is highly improbable that without the railroad this vast nation could have been made and kept a single political unit. It is certain that without the railroad the unprecedented and unparalleled growth of the country's population, development of its resources and increase of its production, wealth and income per capital, would have been impossible.

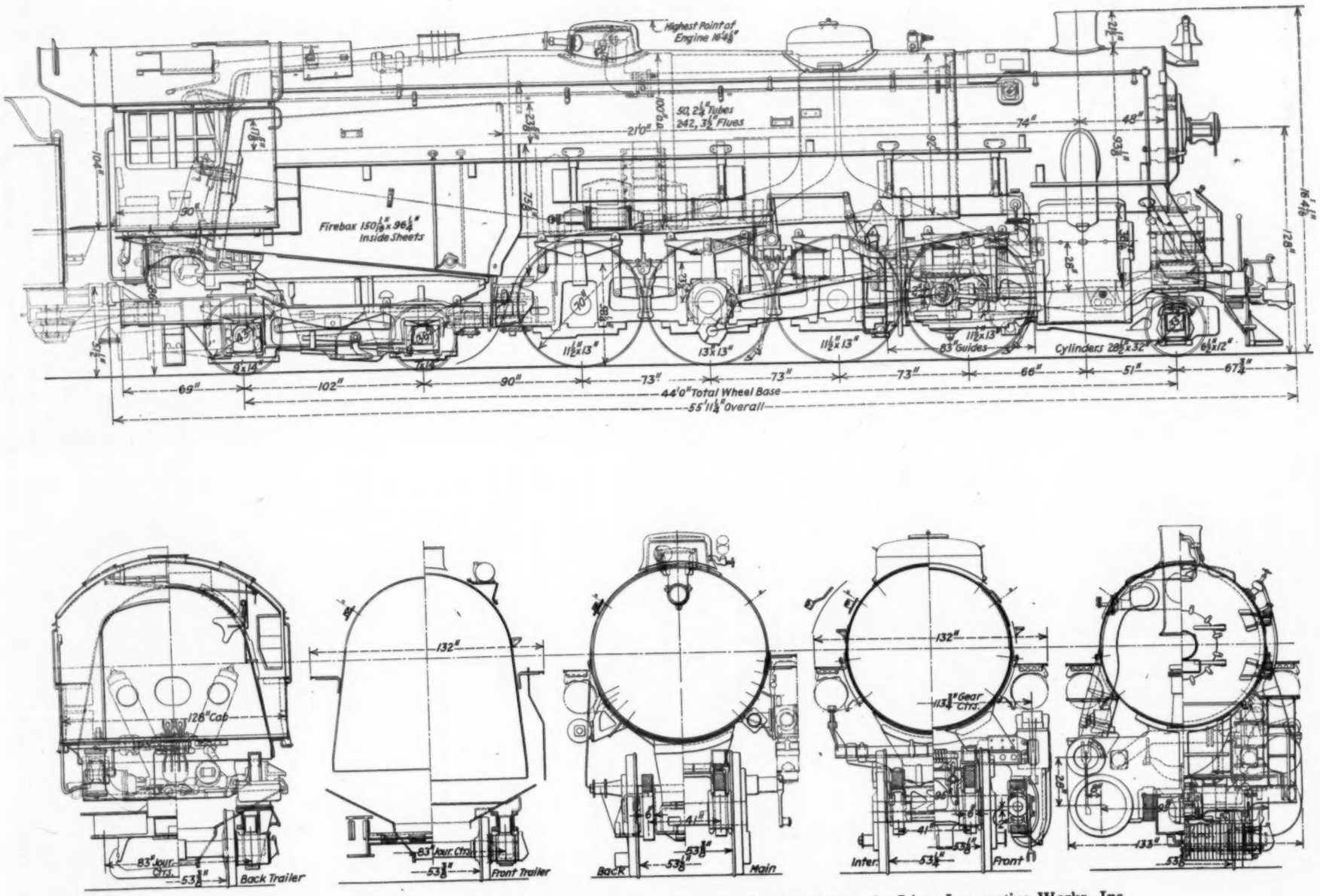
Visualizing Past Development

Very few persons can visualize, without the aid of physical demonstration, the steps by which the development of the railways has been brought about—the work of thousands of inventors; the initiative and effort of builders and managers; the sacrifices, foresight and courage of investors. Most persons take railway service as a matter of course, like light and air, and say much more about it when it is bad than when it is good. Not only are they not able to visualize the past development of the railroad, how it has been achieved, and the gigantic effects it has produced, but they are even more unable to visualize the future effects of railroad development or lack of development. Never in the history of the railroads has the improvement of their service produced such great and beneficial economic effects as within the last four years, and yet the public has so little understanding of the means by which this improvement has been effected and of its economic importance that it is tolerating without protest a policy of railway regulation which, if long pursued, would arrest the physical improvement of the railways and cause disastrous deterioration of their service.

An exhibition and pageant such as those the Baltimore & Ohio is giving make it possible for the spectator to visualize the past physical development of the railways without much effort of the imagination. The entire history of American railways passes before him personified, as it were, in locomotives ranging from the diminutive and primitive "Tom Thumb" to the most modern leviathans of the rail. There is nothing else movable that is so impressive looking as a big locomotive, and when the spectator has seen an entire series of locomotives go by, ranging from the oldest and smallest to the most modern and largest that have been used in this country he begins to get a real and definite idea of how the development of our railways and the improvement of their service have occurred, of the continuous revolution that has taken place in their physical facilities and of how this revolution has enabled them tc lead the world in the mass production of freight transportation and in consequence to operate as economically that they can and do pay the highest wages in the world while charging almost the lowest rates. When he has seen not only the locomotives in the pageant, but also exhibits tracing the development of tracks, bridges, signaling, freight cars, passenger coaches, sleeping cars, he has been sufficiently initiated into the mysteries of railroad engineering to take more interest in and more readily grasp what is involved in questions of railroad economics and questions of public policy affecting the railways.

What the Baltimore & Ohio is doing is being done on a large and impressive scale for a single railroad. That it will derive benefits that will exceed many times over the labor and cost involved we have no doubt. Its show has a human interest, combined with a very practical character and purpose, that make it a fine example of effective institutional advertising. What this one railroad is doing in its own interest might well be done on a much larger scale by all the railways and the railway manufacturing and supply industry of the country in the interest of all of them. The Baltimore & Ohio is having its celebration this year because it was one hundred years last February since its charter was granted by the Maryland legislature. It was not, however, until 1830 that railroad operation in common carrier service actually began in this country. In May of that year the Baltimore & Ohio began running horse-drawn cars for passengers from Baltimore to Ellicott's Mills. In the following August it made the first test operation of a steam locomotive on a common carrier line in the United States and in December of the same year the locomotive "Best Friend" on the Charleston & Hamburg, now a part of the Southern railway, gave the first successful demonstration of steam operation in common carrier service by hauling a few cars loaded with passengers. It would seem, therefore, that 1930 would be the most appropriate year in which to celebrate the centenary the beginning of stea mrailroad operation for common carrier service in the United States, and that the making of plans for a big celebration in that year should soon be begun by the railroads and affiliated interests, especially the railway manufacturing and supply industry.

The first century of railroad development and operation in the United States is drawing to a close with the railroad situation such that no reasonable effort should be spared to make the public realize the magnitude of the contribution the railroads have made to the nation's progress and well-being, what has rendered it possible for them to make this contribution, the extent to which they can contribute toward its progress and prosperity in the future and how they must be treated to enable them to make this needed contribution. "I have but one lamp by which my feet are guided," said an American statesman a century and a half ago, "and that is the lamp of experience. I know of no way of judging the future but by the past." The development of the physical facilities and service of our railways have occurred under private ownership and under a public policy that has conceded to their owners the same fundamental rights of property that have been accorded the owners of other kinds of property and has given to their builders and managers a large latitude for the exercise of initiative, foresight and courage. The position of leadership our railways hold in the world is evidence that this public policy has been a wise one. After an unsatisfactory trial of government operation incidental to the nation's participation in the great war, they were quickly returned to private operation under legislation which imposed some new restrictions upon their management, but which was intended to assure to them that opportunity, under efficient operation, to earn reasonable profits which is essential to the successful management of any kind of privately owned property. That they will not get this policy carried out without a hard struggle has been made evident by the attitude regarding valuation and regulation of rates recently assumed by the chief government railway regulating body. With such a struggle impending the strength of the argument is greatly increased for doing everything practicable to present to the public the lessons of the past and the conditions of the present to aid it in deciding for a policy of railway regulation that will not hinder the railways in the future from contributing as they have in the past to the country's progress and welfare.



Elevation and Cross Sections of the 2-8-4 Type Locomotives Built for the Erie by the Lima Locomotive Works, Inc.

Erie Acquires 2-8-4 Locomotives for Freight Service

Designed to haul heavier trains at greater speeds—
Tractive force with booster, 85,000 *lb.*

THE Erie has recently placed in service 25 locomotives of the 2-8-4 type built by the Lima Locomotive Works, Inc., and essentially similar in design to the now well-known A-1 locomotive of that builder. The Erie locomotives weigh 457,000 lb., of which 274,000 lb. is on the drivers, and 131,800 lb. on the four-wheel articulated trailing truck. They carry 250 lb. boiler pressure and, with a maximum cut-off of 60 per cent, develop a tractive force of 72,000 lb. Including the booster which drives on the rear pair of trailing wheels, the total tractive force is 85,000 lb.

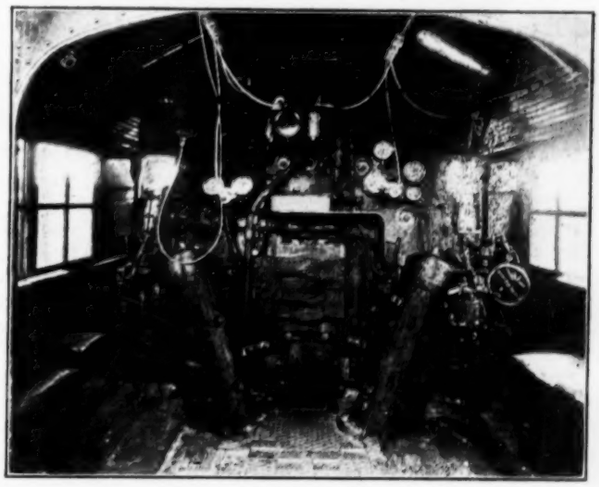
As the 70-in. driving wheels would indicate, these locomotives were designed primarily for pulling fast freight. They are being placed in main line service and operate over two divisions which extend from Marion, Ohio, to Meadville, Pa., a distance of 203 miles. The ruling grades eastward are 1.295 per cent between Marion, Ohio, and Kent, and one per cent between Kent and Meadville, Pa. Westbound, the grades are one per cent between Meadville and Kent and 1.315 per cent between Kent and Marion. The locomotives were designed to haul heavier trains at higher speeds over these two divisions. So far, the locomotives have more than met the requirements, in fact they have been able to haul the same tonnage trains at the same speeds as those hauled by the Erie 2-10-2 type locomotives. Each locomotive is replacing a Mikado type locomotive which will be put in service elsewhere on the Erie system. It is expected that, owing to the fact that the locomotives haul heavier trains at greater sustained speeds, the 25 new units will ultimately replace more than 25 Mikado type locomotives.

How Increased Tractive Force was Obtained

The first 2-8-4 type locomotive built by the Lima, and generally known as the Lima A-1, was described on page 1077 in the May 2, 1925, issue of the *Railway Age*. This locomotive developed a tractive force of 69,400 lb. and with the booster in operation, a tractive force of 82,600 lb. The Erie locomotives develop a tractive force of 85,000 lb. A comparison of the more important dimensions and proportions of the two locomotives will serve to indicate the changes made to secure this additional tractive force. A comparison will be found in the table.

It will be seen that the cylinders of the Erie 2-8-4 have been increased to 28½ in. by 32 in., and the boiler pressure increased 10 lb. or to 250 lb. The weight on the drivers has been increased 26,000 lb., or to 274,000 lb., and the total engine weight has been increased 72,500 lb. above that of the A-1 or to a total weight of 475,500 lb. The diameter of the driving wheels has been increased from 63 in. to 70 in.

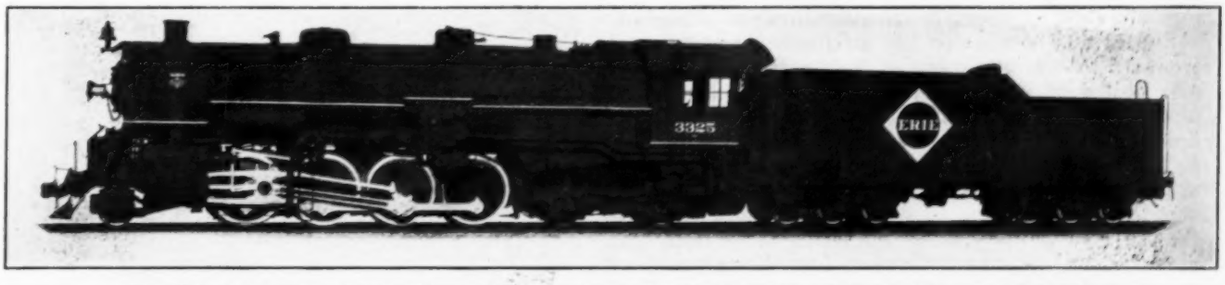
While the grate areas are the same, the outstanding difference in boiler proportions is the increase in heating surface areas. The length over the tube sheets has been increased from 20 ft. to 21 ft. The total evaporative heating surface has been increased about 11 per cent and there is a 21 per cent increase in the amount of superheating surface resulting in an increase of combined evaporative and superheating surface of about 14 per cent.



The Interior of the Cab Showing the Arrangement of the Light Fixtures

The Trailer Truck and Cylinders

As in the A-1, the Erie engines are equipped with the articulated four-wheel trailing truck which does not require rear frame extensions and has made possible a marked improvement in the ash pan design; the articu-

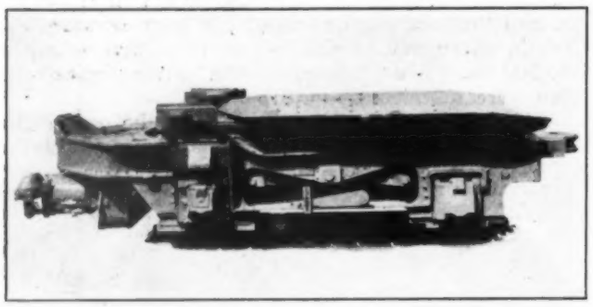


The Erie 2-8-4 Type Locomotive which Develops with the Booster, a Tractive Force of 85,000 lb.

lated main rod which delivers its load on two outside crank pins, instead of on one, and the simple port arrangement by which an unbalanced cut-off has been obtained in the two ends of the cylinders at starting with a resulting increase in the smoothness of the starting torque-curve.

The articulated four-wheel trailing truck is practically the same design as that used on the A-1, the main difference being that the A-1 truck was made up of several parts while the frame of the Erie truck is cast in one piece.

The Commonwealth Steel ash pan, instead of being attached directly to the mud ring, is built into the trailer



Side View of the Four-wheel Trailer Truck, Showing the Ash Pan in Place

truck, and when the trailer truck is removed from the locomotive, the ash pan is removed with it. The width of the flare required to keep the ash pan under the firebox when the trailer is displaced laterally on the curves also provides an unrestricted air opening between the ash pan and the mud ring on all four sides.

The booster drives on the rear trailer axle. This axle has 9-in. by 14-in. journals and 43-in. wheels. The front trailer has 7-in. by 14-in. journals and 36-in. wheels.

Owing to the weight limitations imposed on the A-1, cast steel cylinders were used to reduce the weight. The weight limitations for the Erie engines were more liberal and cast iron cylinders were used instead of cast steel. Medium carbon steel was used for the crank pins, piston rods, main and side rods and axles. Duplex type Hunt-Spiller packing rings were used in the Z shape cast steel piston heads provided with Hunt-Spiller bull rings.

Boiler Equipment

The size of the fire box and boiler does not differ materially from the A-1 boiler. The diameter of the first ring has been increased 4 in. or to 92 in. The length between the flue sheets has been increased from 20 ft. to 21 ft. The steam is taken from the dome through an inside dry pipe to the Type E superheater header at the rear of the smokebox. The American multiple type front end throttle is used. Flextite steam pipe casings are used to eliminate air leaks into the smokebox.

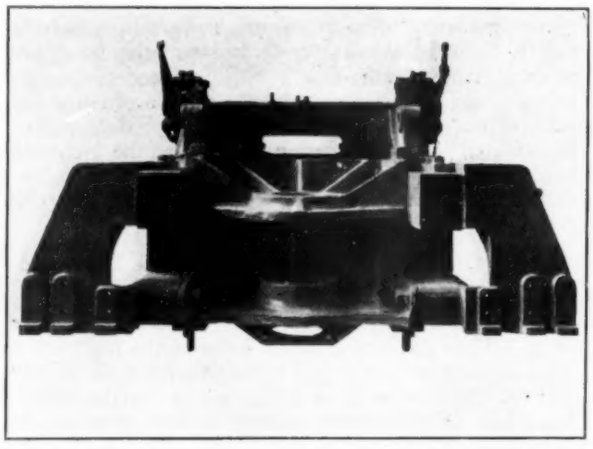
Superheated steam for the auxiliaries is distributed from a point on the outside of the smokebox on the left side of the engine. A 2-in. lagged iron steam supply pipe leads directly from a shut-off valve at the superheated header connection to a manifold. A 1½-in. lagged iron pipe leads from the bottom of the manifold and supplies steam to the two air compressors located ahead of the smokebox. Two ½-in. iron pipes lead from the manifold and pass under the jacket to the back head of the boiler. One of these pipes furnishes superheated steam to the Sunbeam turbo generator, to the preliminary booster throttle and to the stoker engine, and the other pipe furnishes steam to the Worthington feedwater pump. A 1¼-in. pipe line leading from the shut-off valve at the smokebox supplies superheated steam to the blower line. The blower is operated in the cab by an extension rod in which are located two universal joints. A saturated turret is located just outside of the cab. This turret supplies steam to the stoker jet line, grate shaker, tank heater, the Detroit lubricators and the Ohio non-lifting injector.

The Tender

The rectangular type tenders which have a capacity of 16,500 gal. of water and 24 tons of coal, are equipped with Commonwealth water bottom frames and six-wheel trucks. Fifteen of the engines are equipped with Miner A 70X tender draft gear and the remainder with M-17 draft gear. The Franklin spring type radial buffer and unit safety draw bar is used between the engine and tender.

Cab Arrangement

In arranging the control valves and equipment located in the cab, considerable attention has been given to providing for the convenience of the engineman. Of particular interest is the arrangement of the cab lights. Seven outlets are provided on the inside of the cab roof, three on the engineman's side and four on the fireman's side. Heavy, solid rubber cables lead from six of these outlets to the cast aluminum light fixtures which illuminate the faces of various groups of gages and the water columns. A long armored flexible cable leads from one of the outlets on the fireman's side to an extension light



Hinge Casting at the Rear End of the Main Frames

which may be carried to any location in the cab. The principal dimensions and data are shown in the table.

Railroad	Erie
Type of locomotive	2-8-4
Service	Freight
Cylinders, diameter and stroke	28½ in. by 32 in.
Valve gear, type	Baker
Valves, piston type, size	14 in.
Maximum travel	9 in.
Steam lap	2⅜ in.
Exhaust clearance	⅛ in.
Lead in full gear	¼ in.
Cut-off in full gear, per cent	60
Weights in working order:	
On drivers	274,000 lb.
On front truck	51,700 lb.
On trailing truck	131,800 lb.
Total engine	457,500 lb.
Tender	309,000 lb.

Wheel bases:	
Driving	18 ft. 3 in.
Rigid	18 ft. 3 in.
Total engine	44 ft.
Total engine and tender	86 ft. 7¾ in.
Wheels, diameter outside tires:	
Driving	70 in.
Front truck	33 in.
Trailing truck	36 in., 43 in.
Journals, diameter and length:	
Driving, main	13 in. by 13 in.
Driving, others	11½ in. by 13 in.
Front truck	6½ in. by 12 in.
Trailing truck	7 in. by 14 in., and 9 in. by 14 in.
Boiler:	
Type	Straight top
Steam pressure	250 lb.
Fuel, kind and B.t.u.	Bituminous
Diameter, first ring, inside	92 in.
Firebox, length and width	150⅛ in. by 96⅛ in.
Height mud ring to crown sheet, back	72⅝ in.
Height mud ring to crown sheet, front	98⅜ in.
Combustion chamber length	None
Tubes, number and diameter	50, 2¼ in.
Flues, number and diameter	242, 3½ in.
Length over tube sheets	21 ft.
Grate area	100 sq. ft.
Heating surfaces:	
Firebox	320 sq. ft.
Arch tubes and syphons	128 sq. ft.
Tubes	616 sq. ft.
Flues	4,633 sq. ft.
Total evaporative	5,697 sq. ft.
Superheating	2,545 sq. ft.
Comb. evaporative and superheating	8,242 sq. ft.
Special equipment:	
Syphons	Two
Superheater	Type E
Feedwater heater	Worthington
Stoker	Duplex
Booster	Trailer
Tender:	
Style	Rectangular
Water capacity	16,500 gal.
Fuel capacity	24 tons
Weight proportions:	
Weight on drivers ÷ total weight engine, per cent	59.8
Weight on drivers ÷ tractive force	3.81
Total weight engine ÷ comb. heat. surface	55.5
Boiler proportions:	
Tractive force ÷ comb. heat. surface	8.73
Tractive force × dia. drivers ÷ comb. heat. surface	612
Firebox heat. surface ÷ grate area	3.20
Firebox heat. surface, per cent of evap. heat. surface	5.63
Superheat. surface, per cent of evap. heat. surface	44.7
Comb. heat surface ÷ grate area	82.42

Comparison of Locomotive A-1 and the Erie 2-8-4 Locomotive

	A-1	Erie
Type	2-8-4	2-8-4
Cylinders, diameter and stroke in	28 in. by 30 in.	28½ in. by 32 in.
Cut-off in full gear	60 per cent	60 per cent
Boiler pressure	240 lb.	250 lb.
Weights in working order:		
On drivers	248,200 lb.	274,000 lb.
On front truck	35,500 lb.	51,700 lb.
On trailing truck	101,300 lb.	131,800 lb.
Total engine	385,000 lb.	457,500 lb.
Diameter of drivers	63 in.	70 in.
Heating surfaces:		
Firebox, incl. arch tubes and syphons	*337 sq. ft.	448 sq. ft.
Tubes and flues	4,773 sq. ft.	5,249 sq. ft.
Total evaporating	5,110 sq. ft.	5,697 sq. ft.
Superheating	2,111 sq. ft.	2,545 sq. ft.
Comb. evaporating and superheating	7,221 sq. ft.	8,242 sq. ft.
Grate area	100 sq. ft.	100 sq. ft.
Rated tractive force:		
Engine	69,400 lb.	72,000 lb.
Engine and booster	82,600 lb.	85,000 lb.
Factor of adhesion	3.58	3.81

*Arch tubes only in the A-1.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading during the week ended September 24 amounted to 1,125,868 cars, a decrease as compared with loading in the corresponding week of last year of 49,539 cars and an increase as compared with 1925 of 4,843. Grain and grain products was the only commodity classification in which loading was heavier than in the corresponding week of 1926. Coal loading declined 27,211 cars and ore 20,208 cars from last year's totals. The Pocahontas and Southern districts showed gains as compared with last year, but loading in all other districts was smaller. The summary as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

WEEK ENDED SATURDAY, SEPTEMBER 24, 1927

Districts	1927	1926	1925
Eastern	242,512	263,012	247,905
Allegheny	220,809	239,039	215,775
Pocahontas	64,732	63,048	59,258
Southern	167,540	164,557	167,642
Northwestern	177,384	180,790	175,516
Central Western	165,706	171,331	170,172
Southwestern	87,185	93,630	84,757
Total Western Districts	430,275	445,751	430,445
Total all roads	1,125,868	1,175,407	1,121,025
Commodities			
Grain and grain products	60,157	49,449	55,288
Live stock	32,588	39,773	36,854
Coal	184,088	211,299	178,336
Coke	9,503	12,334	11,908
Forest products	69,034	69,894	72,066
Ore	54,055	74,263	55,455
Mdse. L.C.L.	269,007	269,485	272,746
Miscellaneous	447,436	448,910	438,372
September 24	1,125,868	1,175,407	1,121,025
September 17	1,127,613	1,179,259	1,098,627
September 10	989,472	1,024,998	975,499
September 3	1,117,069	1,143,448	1,102,785
August 27	1,109,225	1,128,563	1,124,438
Cumulative total, 39 weeks	38,871,504	39,134,140	37,892,944

Loading in the week ended September 17 totaled 1,127,613 cars instead of 1,124,231 cars as previously announced, the change being due to a correction made by one of the railroads in its report to the Car Service Division. The corrected totals for the several commodity classifications for the week are as follows: grain and grain products, 60,552; live stock, 31,793; coal, 182,781; coke, 9,746; forest products, 69,353; ore, 56,231; merchandise l.c.l., 268,636; and miscellaneous, 448,521.

The freight car surplus for the period ended September 15 averaged 161,968 cars, as compared with 175,704 cars September 8. The total included 88,951 box cars, 38,467 coal cars, 16,560 stock cars and 10,946 refrigerator cars.

Car Loading in Canada

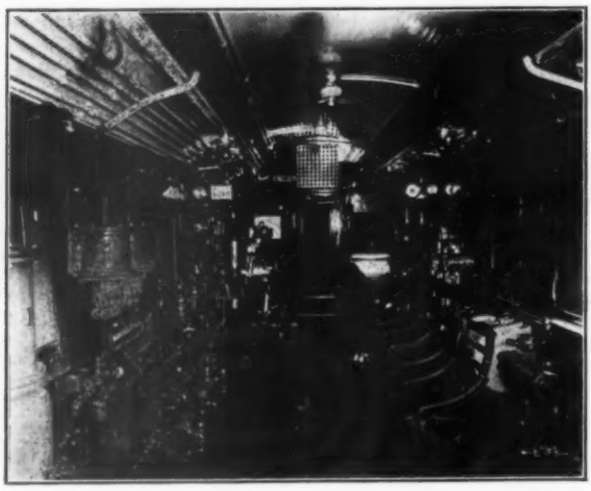
Owing to the late harvest in Western Canada, car loadings in Canada continue to show a reduction in comparison with 1926. The loadings for the week ended September 24 totaled 74,856 cars, which is a reduction of 1,105 cars in comparison with the corresponding week of 1926. However comparison of the statistics shows that there was a reduction of 4,386 cars of grain. The western crop has just started to move, and the volume will increase rapidly in the next few weeks. Apart from grain there was a gain of more than 3,000 cars. The statistics follow:

Commodities	Total for Canada			Cumulative totals to date	
	Sept. 24 1927	Sept. 17 1927	Sept. 25 1926	1927	1926
Grain and grain products	13,244	7,577	17,630	255,094	267,589
Live stock	2,996	2,992	2,947	79,246	78,791
Coal	8,252	8,871	8,470	251,987	207,496
Coke	470	414	356	12,198	13,703
Lumber	3,919	4,177	3,811	144,678	139,026
Pulpwood	1,440	1,679	1,890	123,812	105,784
Pulp and paper	2,152	2,197	1,993	83,825	91,037
Other forest products	2,915	3,161	2,879	115,943	117,799
Ore	2,200	2,181	1,934	63,290	65,200
Merchandise, L.C.L.	18,385	18,687	17,545	649,709	616,526
Miscellaneous	18,883	18,547	16,506	557,713	532,236
Total freight carried	74,856	70,483	75,961	2,337,495	2,235,187

Illinois Central Air Brake Car Remodeled

THE air brake instruction car operated by the Illinois Central contained until recently a demonstration rack representing a 50-car freight train, together with sectional models of air brake equipment and the air brake instructor's living quarters in one end of the car.

With the increase in length of freight trains to 100 cars or more, it became evident that in order to reduce



Each Brake Cylinder Is Wired to the Electric Indicating Board in the Front of the Car

rough handling, slid flat wheels, and damage to equipment to a minimum, it was necessary to remodel the instruction car so that the instructor could demonstrate to engine and train crews the correct practice in handling long trains. Air brake instruction car No. 10 was accordingly taken into the Burnside (Chicago) shops of the Illinois Central, the living quarters removed and new equipment installed, the work of remodeling being carried out under the supervision of E. Von Bergen, general air brake engineer and F. H. Hinton, air brake instructor. The car was completed ready for service on August 30, 1927, office car No. 6 being assigned to accompany it in order to provide office and living accommodations for the air brake instructor.

The air brake instruction car, 72 ft. long and weighing 162,160 lb., now contains a demonstration air brake rack with correct volumes, representing a 100-car train. There are 91 K-1 freight equipments, three F-36 freight equipments, five L N passenger equipments and one U-12-B universal equipment. The rack is so arranged that the six passenger equipments can be operated as either the six head cars or the six rear cars, or independently as a passenger train.

Interspersed through the train are three bad order freight triple valves, viz., leaky triple piston ring, defective emergency valve seat, sticky triple piston ring or "dynamiter." This enables the instructor to demonstrate to the employees the results of these defects in operation.

Each brake cylinder in the train is wired to an electric light on an indicator board. These 100 lights are numbered on the board, and as each brake applies, the light representing that brake becomes illuminated. When the brake releases, the light is extinguished. The indicator board is located above the instructor and thus the employees are enabled to face the instructor and the indicator board while observing the performance of the brakes during all demonstrations.

There are provided for demonstration purposes one complete E T locomotive equipment, H-6 brake valve, S-6 Westinghouse independent brake valve, and C-6 Westinghouse feed valve; also one complete set of L T locomotive brake equipment with H-6 automatic brake valve, New York straight air brake valve, and New York F-2 feed valve; also one complete set of G-6 locomotive brake equipment. A brake pipe vent valve operates in connection with all locomotive brake equipments. Sectional models for use in explaining all internal parts of the equipment are provided as follows:

U-12-B universal valve
L-3 triple valve
K triple valve
F-36 triple valve
Plain triple valve
L. T. control valve
H-6 brake valve
New York straight air brake valve
F-2 feed valve and C-6 feed valve
Brake pipe vent valve
Double pressure retainer valve
Freight car release valve
Freight car combined auxiliary reservoir and brake cylinder

Sectional models of steam heat equipment are also provided as follows:

Vapor regulator
Steam heat reducing valves
Vapor cut-out valves
Thermostatic control

A moving picture projecting machine, installed in a cabinet, is automatically focused when pulled out. Two hundred slides are provided, showing transparent views of all positions of air brake apparatus. The car is wired for 32 volts to operate lights and fans from the axle light generator when the car is in motion. It is also wired for 110 volts for use when the car is parked at terminals.

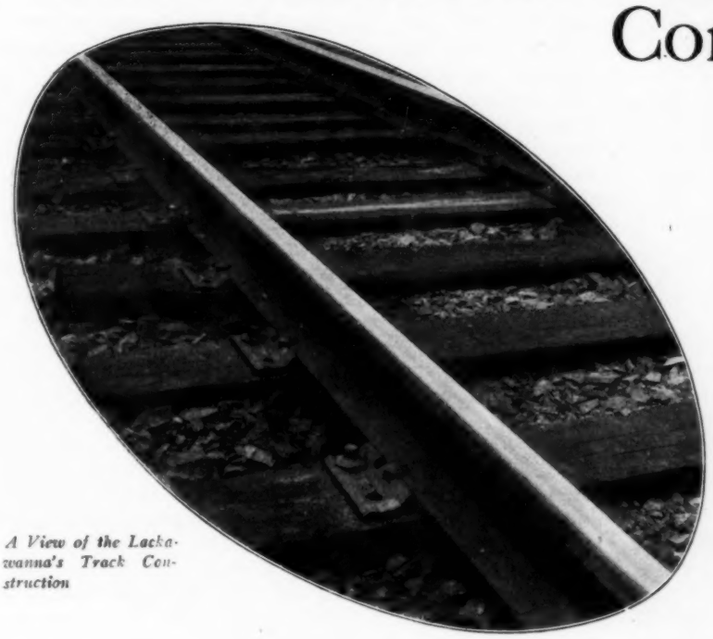
The air brake rack is painted gray, the walls being finished in mahogany with a white ceiling. Four ceil-

Interior of Remodeled Illinois Central Air Brake Car Containing 100-Car Demonstration Rack

ing paddle fans are installed. Comfortable chairs are provided in sufficient numbers so that a class of 52 men can be seated at one time.

The office car contains an observation end and office, two staterooms, a dining room, a porter's room and a kitchen. This car is also wired for both 32 volts and 110 volts, to provide power for lights and fans either when the car is in motion or while parked at a terminal.

The Economics of Heavy Track Construction*



A View of the Lackawanna's Track Construction

A review of the development of the Lackawanna's present standards and of the results secured

By George J. Ray

Chief Engineer, Delaware, Lackawanna & Western

IN my opinion, there is only one real economy (there may be a number of incidental ones) to be effected by heavy track construction, and that is to make it possible to handle our heavy power and heavy cars safely and economically. Are we keeping up with the increase in the weight of the equipment which we have to handle? That is an argument which is always before us. Our equipment has doubled in capacity since the time when I was a track supervisor. We now have loads of from 60,000 to 70,000 lb. per axle on locomotives, and approximately 52,500 lb. on each axle of our heavy duty coal cars. We have to build heavier track construction to take care of this equipment properly.

What Is "Heavy Construction"?

What is heavy track construction, what does it mean, and of what does it consist? First, it consists of a substantial roadbed of the proper width, both on embankments and in cuts. Some years ago, we had occasion to build an embankment that contained 7,000,000 cu. yd. of material. It was three miles long and approximately 120 ft. high, and it was a problem to know just how wide to make a fill of that kind to carry a double-track railroad. We made it very much wider than normal.

A year or so after the line was put into operation, during a rate case, I was accused of over-expenditure in the construction of this line. My contention was that no man knew anything about what was going to happen in the future on the sides of that fill, and my guess was that in spite of all the material we had put in it, we were going to have to reinforce it consistently and regularly to keep it up to standard. As a matter of fact, we have had to haul cinders on that fill every winter and will have to as long as the railroad runs. If we had not built it much wider at the start, we would not have much of a fill there today because the erosion on the sides of the embankment from rainstorms is very heavy.

I contend, therefore, that whether in a rock or in an earth cut, you ought to make your roadbed wide, so that you will not have to use the work train all of the time to keep the ditches clean. The first cost is the least. One never can take material out of a cut after a railroad has started operation as cheaply as when builidng it, so do it in the first place.

After the roadbed comes drainage. One cannot have heavy track construction and maintain good track unless he has good drainage. It is essential therefore, not only to have good side ditch drainage, but also good cross drainage, if you are going to maintain the ballast, which comes next in order.

One cannot maintain good track unless he has a good, deep bed of ballast. The material must be the proper size and must be clean and free from dirt and other debris or it will not drain properly. Today, with machine tamping, it is my opinion that drainage is more important than it ever was before, because we are packing the material in very tight and unless the water can get away from the roadbed it is going to cause some trouble.

There are many incidental things which make a clean, heavy bed of ballast more necessary. For instance, locomotives with automatic stokers are throwing out more front end cinders and more small particles of unburned coal and coke than ever before. Those ashes must be removed from the track, which means a little more cleaning of the ballast and probably a little deeper ballast and better drainage if we are to keep our tracks clean.

Ties Should Be Large But Not Over-size

I have always been a great believer in big, uniform ties, not over-size, but uniform in size. They must be large enough to support the loads and transmit them to the roadbed below. If they are too large they take too much creosote. In the treating of ties—and nobody should be putting ties in the track today without treatment—if some ties are twice as big as they ought to be they are going to absorb an abnormally large proportion of the creosote, and the smaller ties will not get enough. The oversize ties are also hard to handle.

There is another thing about over-size ties, which I don't think is sufficiently well understood. It is that the seasoning of the average-size tie in the pile regulates the time at which those ties go into the retort. The tie which is over-size will not be properly seasoned, but

*Abstracted from an address presented before the annual convention of the Roadmasters' and Maintenance of Way Association at Buffalo, N. Y., on September 21.

will be full of water in the center and the treatment will not do it the good it ought to.

To put ties which are too small in tracks that carry heavy traffic is little short of folly. As an example of what will happen with ties that are not of sufficient size, I cite the following: In 1904, 1905, 1906 and 1907, we put in a lot of treated 8-in. by 8-in. and 8-in. by 10-in. oak and Southern pine bridge ties. About 1910 and 1911 we found that those ties were badly crushed and we had to take them out. They were not rotten and should have given us 20 years service, but they were entirely destroyed before they were 10 years old. We replaced those ties in 1910 and 1911 with 10-in. by 10-in. and 10-in. by 12-in. oak ties, and since 1912 we have not put any ties smaller than these on our bridges. They are now 15 years old, and I am positive that they are good for 15 years more.

What is true on the bridges is true to a certain extent on the track. We have to transmit the load from the track to the roadbed below, and if our tie is not large enough to provide the bearing area, we are not going to get the service out of the tie which we have a right to expect.

Large Tie Plates With Screw Spikes

Our experience with the bridge ties led us to believe that we should take some drastic means to prevent wear on our track ties. So we decided in 1909 to use a flat bottom plate, made larger than any plates used up to that time, and screw spikes. This plate was designed to fit the 90-lb. D. L. & W. section of rail which we were then using.

We decided that it would be useless to put a screw spike in a tie plate to hold the rail without having a support for the head, so we provided shoulders on both sides of our plates. At first the mills told us they could not be rolled, but after about three months we convinced them that they could. In 1911 when we increased our rail section to 100-lb. we raised the shoulder for the thicker base of the new rail and we soon decided that we had better add 5/8 in. to the web of the rail, making the rail 105 lb.

Whenever you replace rail with a larger section having a wider base and a wider head you face a serious problem because the new fittings add so much to the cost. To avoid this, we kept increasing the weight of our rail up to 118 lb. without changing the width of the base. We didn't want to throw away the good tie plates which were preserving our ties. However, four years ago we decided that we had obtained pretty good service out of the ties which were laid in 1910, 1911 and 1912 and that we could replace our rail with 130-lb. A. R. E. A. section rail.

Three Methods of Fastening Tie Plates

When we went to the 130-lb. rail we concluded that we must fasten the tie plate rigidly to the tie, if it were possible to do that, and absolutely prevent wear between the plate and the top of the tie. There are three distinct methods of holding tie plates in place. The general scheme which most of us use in this country is to use a tie plate which has flanges or cross-ribs of some sort on the base which help hold it to the tie, with spikes driven along the base of the rail to hold it in place and to hold the tie plate down. The plate may have a perfectly flat bottom or it may have flanges, but the scheme is the same.

The English, with their bullhead rails, use a cast plate about 14 or 15 in. in length by 8 in. in width, bolted or screwed rigidly to the tie. The Great Western of England puts these big chairs on at the treating plant under hydraulic pressure and screws the bolts up from the cross clips under the bottom of the tie so that they are fastened rigidly. Then the tie goes out into the field and the rail is held in place with a little teakwood wedge driven in at the side. By this scheme they are getting the wear between the rail and the plate and eliminating it between the plate and the tie.

The third scheme, which is used a great deal in France, comprises a flat bottom tie plate held down by a screw spike with a wooden shim under the plate. This shim is made of 3/8 in. poplar, cut to the size of the tie plate and reduced under a hydraulic press to a thickness of 1/8 in. before it is placed under the plate. It is kept there until it wears out, and when it is removed another one is put in. The French contend that the shim prevents wear on the ties, and I believe they are right. I looked at a lot of these shims, which had been in the track for 10 years, and they were not yet worn out. Others in heavy traffic tracks have to be replaced in three or four years, but the ties showed no appreciable wear.

How the English Conserve Ties

After considering all of these various methods and taking into account the limitations of American practice, we undertook to develop a tie plate for the 130-lb. rail which would stay on the tie. It goes without saying that in this country we cannot follow the practice of using a cast plate such as the English employ. But, after seeing what I did on the English railroads, if I were asked to show them how to improve their track construction I couldn't do it, because they are getting real service out of their ties.

I walked over a lot of English track where the ties have been in service 14, 16, 18, and 20 years with trains running 90 miles an hour and the ties were good. I asked Mr. Griffith, engineer maintenance of way of the Great Western, what they do with the ties when they take them out. He said that the track, ties and all, is lifted bodily and placed in a freight track. They lay track with the joints square so that they can do that. Any bad ties are, of course, taken out. But even after they are taken out of the side track they find further service, for they are split in two for use as fence posts. The fences all over that country are built of old pieces of ties which have served in the track for 25, 30, and 35 years.

My thought was that the first step in heavy track construction is to try to save timber. But there is danger of putting too much money into a tie with the idea of prolonging its life, just as there is danger of putting too much money into a fixture. For example, in 1914 for No. 4 or No. 5 ties, treated ready to put into the track, cost the Lackawanna $1.07. In 1926 they cost $2.12. The cost of No. 1, No. 2, and No. 3 ties in 1914 was $0.92, and in 1926 it was $1.53. How much can we afford to spend on a tie now in order to prolong its life? Will the cost of ties continue to increase during the next 20 years and double their present price; is it going to stay where it is, or is it going to become less?

Tie Renewals Reduced

One of the economies which we feel we have gained by this expenditure for heavier track construction is a reduction in the number of ties necessary on our railroad to such an extent that for the past three years we have been able to buy all the ties we need along our road. That had not been true for 20 years. For the years 1918 to 1926, inclusive, our ties replaced in maintenance show an average life of 22½ years, or, in other words, our renewals for the nine years from 1918 to

1926, inclusive, showed an average of 125 ties per mile of all tracks and for four years they have averaged 94 ties per mile for all tracks.

That is nothing startling for it is about what we expected and hoped for when we started this program. We wanted to increase the life of the ties and we have done it. One of our neighbors, the Lehigh Valley, started treating ties about the same time we did. It used big ties and good ballast and has obtained practically the same results in tie renewals that the Lackawanna has.

I referred a minute ago to the practice of the English of taking the ties out of main tracks and putting them in side tracks. We are now placing in side tracks, ties removed from main tracks because of mechanical injury. Those ties normally have attained their full life, so far as their main track service is concerned, for they won't hold the gage any longer. But as they are perfectly good on the bottom, we turn them over and put them in side and yard tracks where I believe they are good for another 15 or 20 years and maybe a great deal longer. We have removed about 120,000 or 125,000 treated ties from our main tracks for all causes since we started treatment in 1910, out of approximately 6,000,000 ties put in service. Of these 125,000 ties we have used 99,000 in side tracks up to the first of this year. That is one of the economies of heavy track construction for it is going to make it possible to secure side track ties exclusively from the ties which are discarded from main track service.

Large Rail Introduces New Problems

The question of the large rail is a debatable one. My opinion is that as time goes on and more heavy rail is used in main tracks we are going to meet a lot of serious problems. When we wear out a 130-lb. rail in the main line it is not desirable to have to put it into a minor side track. The main problem is the big fixtures, which must be put into the side tracks with the heavy rail, and greatly increase the expense.

It is a fact that the big rail permits big wheel loads with safety. If you have a broken rail, you have less damage in the case of a wreck, both with the big rail and with the heavy track construction. There is less danger and there are fewer wrecks due to track failures with the heavy track construction, so that most of the trouble is going to be due to the equipment and not the track. Heavy rail goes a long way towards prope distributing the load. It gives a better riding track and an easier track to maintain. The individual tie doesn't have to carry quite so much of a load.

There is one incidental economy that is brought about by heavy track construction, especially by heavy rail and track fixtures. The heavy rail cannot be handled by hand. It is necessary to have the proper equipment to handle it. The very fact that you must have equipment to handle this rail, whether you are putting it in the track or taking it out, has brought about a development in machinery and track equipment that is going to result in great economy in the long run. In our own case we are able to get a lot of equipment on our road for handling heavy rail that we could not get when we had lighter rails.

One of the most difficult things to overcome that I have found throughout my track experience is to get the supervisory forces in the field and the foremen to carry out the policies that we have laid down. When we started to use screw spikes, we found we couldn't keep the men from driving them with a maul. Well, we had to find a way to overcome that because it was cutting and destroying the wood, the very thing we were attempting to avoid, so we had to design a new kind of spike, with a smooth part at the lower end, so that it could be driven part way into the tie. When we did that we made the spikes a little longer and finally got away from the difficulty. That is an example of what you always get into when you start something new.

A. E. R. A. Report on Heavy Electric Traction

THE greater part of the work done by the American Electric Railway Association's committee on heavy electric traction this year consists of the compilation and publication of a revised table listing the electric locomotives of the world. The data given for each type of locomotive includes the name of the railroad, a key number, year placed in service, number of locomotives, type of service, method of drive, wheel arrangement, cab arrangement, dimensions, weights and the name of the manufacturers of electrical and mechanical parts respectively. Explanatory charts are also included which illustrate the wheel and cab arrangements referred to in the table.

The committee is at present investigating the subject of rail bonds and extensive information on this subject will probably be included in next year's report. During its investigation the committee learned that some experiments had been conducted in Europe with the thought that by applying a coating to the rail and joint plate, the necessity for rail bonds might be overcome. This matter was taken up with Henry W. Blake, who was then in Europe, and the following information obtained:

"There has been a process developed in Germany, briefly consisting of spraying the ends of the rails with molten tin. The inside of the angle plates were sprayed in the same way, hoping that when they were bolted up, the electrical contact would be sufficiently permanent to avoid the use of other rail connections. The process was tried by the Berlin Elevated and Underground Railway, and the Hamburg Elevated and Underground Railway. In Hamburg, about 15 km. of high speed exposed track on private right-of-way was treated in this manner. The experiment was not a success, due to moisture creeping in and oxydizing the surfaces, increasing the contact resistance. This section is now being rebonded with copper bonds."

It is possible that more information may be developed on this subject and if it is, it will be available for the committee report next year.

To obtain information concerning self-propelled cars, the committee sent a questionnaire to 14 railroads from the results of which the following data were developed:

Operating Data (From Questionnaire) on Use of Self-Propelled Cars in Branch Line Service

Railroads Replying	Motors	Trailers	Total Cars
Boston & Maine	24	11	35
N. Y., N. H. & H.	30	..	30
Seaboard Air Line	4	4	8
Lehigh Valley	11	5	16
Wabash	2	1	3
C., C., C. & St. L.	12	10	22
Missouri Pacific	19	7	26
M., K. & T. Lines	2	2	4
St. Louis & S. W.	8	6	14
St. Louis & San Francisco	20	13	33
C., M. & St. P.	4	..	4
C. & N. W.	7	7	14
Great Northern	12	9	21
Union Pacific	36	17	53
Total	191	92	283

Averages of Operating Gas Car Trains—Year 1926
(Based upon returns from above companies)

Average weight motor cars, tons	39.55
Average weight trail cars, tons	29.46
Car miles motor	6,266,220

Car miles trailer	3,062,631
Car miles total	9,328,251
Car miles per motor car	32,800
Ton miles motor	232,435,000
Ton miles trailer	101,487,500
Ton miles total	333,922,500
Gallons fuel	2,927,417
Cost per gallon	16.02c
Total cost fuel	$469,038.00
Total cost lubricants	75,096.00
Maintenance motors	$575,340.00
Maintenance trailers	31,380.00
Maintenance total	679,854.00
Crew wages	1,122,028.00
Other expenses	225,791.00
Total	$2,572,207.00
Per Train Mile	
Gallons fuel	0.467
Cost of fuel	7.490c
Cost of lubricants	1.205c
Maintenance	10.850c
Crew wages	17.910c
Other expenses	3.603c
Total	41.058c
Per Car Mile	
Gallons fuel	0.314
Cost fuel	5.030c
Cost lubricants	0.810c
Maintenance	7.285c
Crew Wages	12.030c
Other expenses	2.420c
Total	27.575c
Per 1,000 Ton Miles (excluding passenger wgt.)	
Gallons fuel	8.77
Cost fuel	$1.405
Cost lubricants	0.226
Maintenance	2.036
Crew wages	3.360
Other expenses	0.676
Total	$7.703

The report states that the foregoing data, compiled from statistics furnished by 14 roads operating 191 gas cars making over six million miles during 1926, indicates quite conclusively that self-propelled gas cars can be operated in certain classes of branch line passenger service at a materially lower cost than steam locomotive hauled trains.

The membership of the A. E. R. A. is referred by the committee for further details on the subject of self-propelled gas and oil cars to the report of the "Committee on Automotive Rolling Stock," read before the Mechanical Division of the American Railroad Association at the annual meeting in June of this year.

Articulated Train Operation

Information on articulated trains operated by nine different companies was obtained, and brought up to date in tabular form. Information as to the number, size and distribution of motors in electrically propelled articulated trains has been added to the tabulated data. These data now cover all such units as the committee found were being operated in the United States, Canada and England.

Previous reports covered electric railway installations for both subway and ordinary surface operation in various parts of the United States. Within the last few months a new installation of 10 articulated trains for high speed interurban service has been made by the Washington, Baltimore & Annapolis Electric Railroad Company. A drawing of one of these two-car trains is included in the report.

The report states that articulated train units are now in operation in street car service, subway service and steam road service and have recently been added to high speed interurban service. The units actually operating in the heavier services are still comparatively new and limited in number. Attention is directed to the fact that all the larger operators of articulated electric trains are continuing to place in service more of this type of car equipment.

Tabulation of Data on Electrification

Each year the report includes a chart showing the electrified steam mileage and electric locomotive tonnage on steam roads in the United States and Canada. As usual, this curve has been brought up to date. It shows that both mileage and tonnage have increased more during 1925 and 1926 than in any year previous since 1917. It also shows that the locomotive tonnage for a period of about 10 years has been increasing at a more rapid rate than the electrified mileage.

Duplication of Committee Work

The report concludes with an appeal to prevent duplication of effort in future work of committees on electric traction as follows:

"The committee wishes to direct attention to the interest of other associations and the work their committees are doing in the field of heavy electric traction. The National Electric Light Association has published this year an extensive report of their committee on railway electrification, with valuable tabulated data on existing installations. The Electrical Section of the American Railway Association has committees working on subjects closely allied to those reported on by the A. E. R. A. committee, such as bonding, etc., and also on other subjects such as catenary standards reported on by another one of the A. E. R. A. committees. The committee on electric rolling stock of the Mechanical Section of the American Railway Association has compiled and presented extensive data on electric rolling equipment in its report for this year. The Association of Railway Electrical Engineers also has a committee on electrification

Co-operation Among Committees

"Most of the members of the A. E. R. A. committee are either members of some of the above mentioned committees or closely allied with men who are members. Therefore, in order to avoid a large duplication of effort, it is important that these various committees endeavor to concentrate on those specific subjects which are of greatest importance to their Association, making the fullest use of the work of the other committees, with proper credit where this can consistently be done."

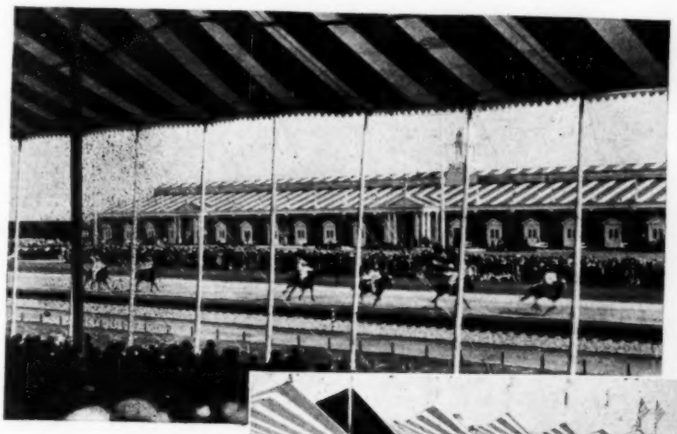
The report is signed by A. H. Armstrong, H. W. Cope, A. H. Daus, John C. Davidson, J. H. Davis, J. V. B. Duer, H. H. Febrey, James T. Hamilton, William E. Huber, E. C. Johnson, John O. Madison, M. W. Manz, L. S. Wells, A. H. Woollen, Morris Buck, secretary; J. M. Bosenbury, vice chairman; H. F. Brown, chairman; F. H. Miller, sponsor.

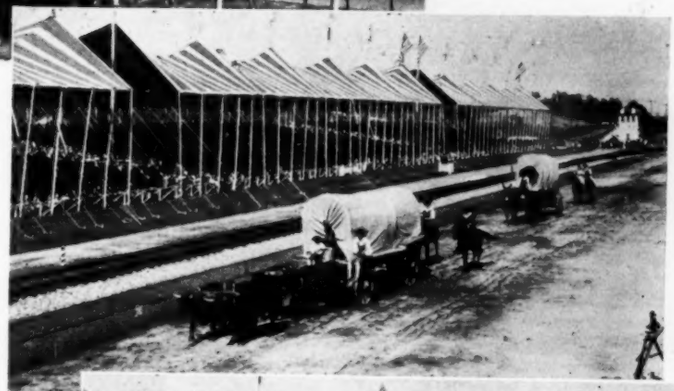
* * * *

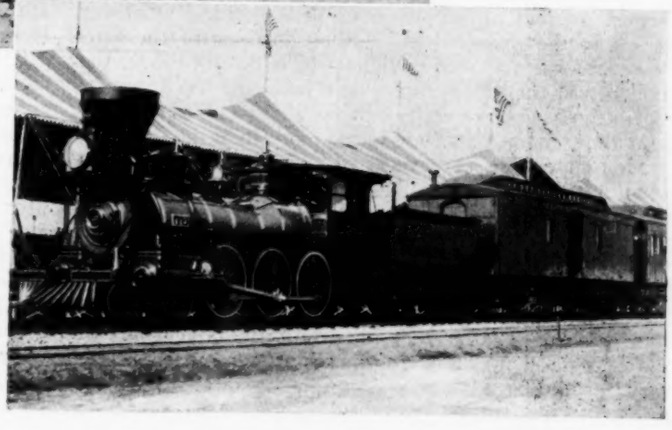
Steam Car in Use on the London & North Eastern

Iron Horse Fair Closes October 15

Popularity of exposition leads to postponement of closing—Two performances of pageant given daily during final week—Attendance around three-quarter million







TOTAL attendance at the Baltimore & Ohio's centenary celebration, "The Fair of the Iron Horse," had reached a total of 630,000 on Wednesday, October 5, with a promise of going to 800,000 by the end of the week. Because of the popularity of the fair, the railroad has announced that the closing date has again been set forward, to October 15. Originally it was intended to close on October 8, which date was later advanced to October 12.

In addition, in order to provide seating accommodations for a larger number of persons, the pageant which has moved but once a day, will beginning October 11 be given twice a way, at 11 a.m. and 2:15 p.m. This will raise the number of persons who can be given seats each day for a pageant showing from 12,000—the capacity of the reviewing stand—to double that number. Since the average daily attendance is in excess of 50,000, this "double-heading" arrangement is of real importance to intending visitors.

Although the exposition is one designed to appeal to the public generally, rather than to railroad men exclusively, nevertheless attendance of railroad men bulks large in the total. Naturally there are heavy delegations from the employees of the Baltimore & Ohio itself. However, the desire to witness the fair has been so great among employees of other railroads that several excursions have been operated from off-line points. Among such are notably the Pennsylvania, the Reading and the Southern.

Each day of the exhibition finds officers of scores of railroads seated in the reviewing stand and among them are represented not only American and Canadian lines, but also foreign roads.

The wide divergance in occupation of prominent guests outside the railroad field would seem to show a general interest in railroading. A glance at the railroad's roster of famous visitors—which roster necessarily is far from complete—shows several senators and congressmen, several presidents of nationally known financial institutions, a foreign ambassador and his staff and guests, chief executives of several large railroad equipment and supply concerns, the Canadian Minister at Washington, several Interstate Commerce Commissioners and state commissioners, scores of journalists and writers, high officers in the army and navy, the president of the American Telephone & Telegraph Company, the president of the American Railway Express Company accompanied by his official staff, large delegations from chambers of commerce, Rotary Clubs

and other civic organizations, hundreds of mechanical engineers, students and teachers by the thousands two cabinet officers and, by no means least significant, large numbers of the clergy of many sects and creeds.

The message of the railroad's progress from humble beginnings down to the present is, therefore, being delivered, as it was intended to be, to leaders not only in the railroad field, but in all activities.

The exposition touches at some point or other on almost every phase of railroading, as it does also upon almost all other forms of transportation which preceded it and the more recent development—the highway vehicle. Naturally, all points cannot be covered with exhibits which are the "actual thing" and in many cases models or pictures or floats have to tell the story. More-

President Willard Opening the B. & O.'s Centenary Exposition

over, it is not feasible for all the "actual" exhibits to move. The development of cars and locomotives are shown fully by actual examples, many of which move in the pageant, the locomotives under their own steam. Other exhibits are shown by "actual" presentations which, nevertheless do not form a part of the pageant—for instance the oil electric locomotive, the rail motor cars, the agricultural train, the Pullman exhibit and the signal exhibit (some actual signals, but main reliance on 90 colored photographs and charts).

The pageant, made up of "actual" examples which, as an added attraction, move, appeals most strongly to the largest number of people, since in it nothing whatever is left to the imagination. Other portions of the fair, however—the full size exhibits which do not move, the models and the photographs—are none the less interesting to those who are really curious about railroading and who allow themselves time to see more than the pageant.

Men in charge of several of the stationary exhibits when interviewed stated that a large proportion of their visitors were railroad men—coming from roads all over the United States and Canada, and including officers as well as men in the ranks. The *Railway Age* was asked, however, to convey the word to railroad men who intend visiting Halethorpe that it is advisable for them, if they wish to see the very important stationary part of the exposition, to allow for more time than that necessary for the pageant only—coming to Halethorpe early in the morning rather than just before the pageant.

Most of the locomotives and cars which move in the pageant are also open to inspection during certain portions of the day. Staircases are erected to permit easy access and most of them have a steady stream of people passing through constantly. Interest in the more modern of this equipment is keen not only among railroad men but among all. The old equipment is highly effective in the pageant, but fro ma standpoint of detail and close inspection the huge modern equipment is just as popular—perhaps even more so.

One of the exhibits among modern equipment which has had a large share of attention, probably because it differs so widely from its contemporaries, is the Great Western of England's locomotive, the "King George V." This engine, offering such a contrast to American practice, has proved particularly attractive to American railroad men who admire its trim simplicity, its color—in fact almost everything about it except the cab. One grizzled B. & O. veteran engineman was overheard to remark that he would freeze to death in such an open cab, designed for the milder English winters. He also compared the seating arrangements unfavorably to those in use in America.

The management of the pageant excites the admiration of all who attend. Every detail, it seems, has been worked out to insure smooth operation. Even with a crowd of 76,000 people which was the record attained on October 1, which was far beyond the facilities provided, things moved with surprising smoothness, and October 1 was a very hot day. A number of women were overcome with the heat, but there were no fatalities. The efficient hospital organization saw to that.

Aside from the problems of taking care of visitors at the Halethorpe fair grounds, the matter of getting them there and taking them home raises difficulties of its own. There is no regular means of transportation between Baltimore and the scene of the exposition, 7 miles distant, except rather infrequent local train service. The railroad therefore has provided frequent extra train service for the 7-mile trip.

This has been a difficult task since there are no engine turning facilities at Halethorpe and the engines have to operate backward in one direction which necessarily slows up the operation.

To care for this traffic at Halethorpe the road built two long platforms, each sufficient to handle two 10-car trains—one for incoming trains and the other for those returning to Baltimore (eastbound). As a safety measure on the eastbound platform a foot or so from the tracks stout fence posts were erected on which chains are strung. Guarding this chain fence are a number of trainmen and railroad police. Not until trains come to a full stop are the chains removed and passengers allowed to board them and, before a train starts, the chains are again put up and passengers once again restrained from boarding it.

The number of extra trains run to care for the Baltimore-Halethorpe traffic averages about 20 a day in either direction, although on one day 32 were operated.

In addition to these trains almost every day sees the operation of a number of excursion trains from more distant points. On one day there were nine of them. Moreover, all incoming and outgoing trains at Baltimore are carrying greatly increased traffic. The road has, however, been able by its careful planning to handle this business without untoward circumstance.

About half the visitors to Halethorpe come by private automobile or bus. To care for the automobile traffic the road provided parking space for 3,000 cars. This space was doubled and on one day 6,500 cars were parked in the space provided.

Illinois Central a Premier Investment

Dividends earned with wide margin over long period—
Large capital expenditure program

THE common stock of the Illinois Central has few rivals among railroad stocks with respect to the favorable regard in which it is held by conservative investors. This favored position results from the property's long-time record of regular dividend disbursements and its stability of earning power. The common stock has paid a dividend in every year, since 1860, and since 1850 some 275 million dollars has been distributed in common dividends. The present 7 percent rate dates back to 1905, except that from 1913 to 1915, 5 per cent was paid and in 1916, 6 per cent. The company has earned these dividends in each of the past several years with a satisfactory margin, earnings per share for the past seven years having averaged about $12.50 or 1.8 times the dividend requirements.

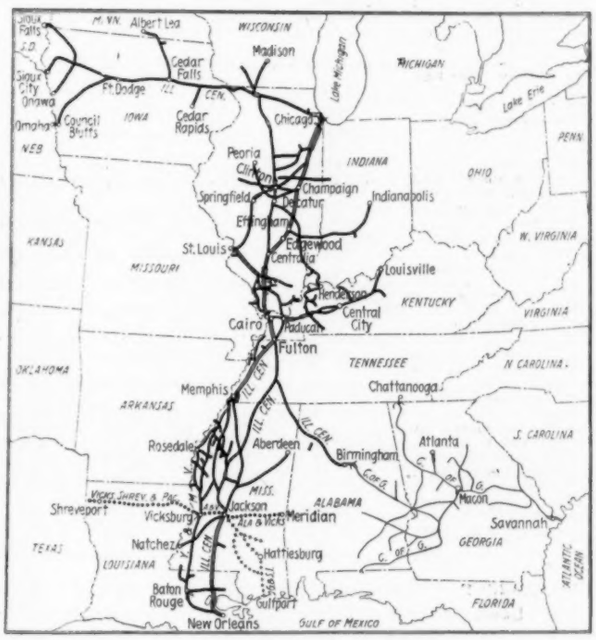
Stability of earning power has been indicated in several recent periods of stress and in several different ways. Thus in 1920 and 1921, in each of which years most roads suffered extreme adversity, Illinois Central per-share earnings averaged $10.64. In 1922, the year of the railway shopmen's strike, the Illinois Central had only a minor proportion of its shop forces join the strike, equipment was properly maintained, the road found itself in a position to handle much traffic that other roads were not able to handle, and, as a result, had one of the best years in its history with earnings per share of $14.31. This year the Illinois Central has been confronted with a cessation of output in the union coal fields in southern Illinois; it has had traffic losses due to the Mississippi river floods, and has had to increase its maintenance expenses considerably to avoid loss of lines in the flooded districts and to repair damages. Notwithstanding, its traffic in the first six months of 1927 was the greatest in its history with the single exception of the first half of 1923; its ton-miles for June were the greatest for any June, and its net railway operating income for the first seven months of 1927 shows a loss from the same period of last year of less than 2½ per cent.

Stock on Purely Investment Basis

It is not surprising, therefore, that Illinois Central common stock sells on the stock exchange on a purely investment basis. The price has had a range this year between 121⅛ on January 10, and 139 on October 3, which gives a yield of 5 per cent, approximately the same yield as given by most of the railroad stocks that have standing as investment issues. The stock was one of a small list of railroad stocks that retained its investment characteristics during the after the war decline in railroad stock values. In 1920, which was about the poorest year in this respect, the price ranged between 80⅞ and 97¼.

Ratios of Operation Suffer

The road is going through a period of expansion, including both its facilities and its mileage. During the past four years it has spent for additions and betterments about 168 million dollars, an amount equivalent to 38 per cent of its total book investment in road and equipment on December 31, 1926. The larger items of expenditure have included electrification at Chicago, the construction of a new central classification yard in the Chicago terminal district—Markham Yard—and the construction of a cut-off line between Edgewood, Ill., and Fulton, Ky. In addition it has acquired control of the Gulf & Ship Island which, however, is still separately operated, and since June 1, 1926, it has operated under lease the Alabama & Vicksburg and the Vicksburg, Shreveport & Pacific. As is frequently the case in situations of this kind, there seems to have been an adverse, although unquestionably only



The Illinois Central

temporary, effect on earning power or a failure of net to increase commensurately with the increase in plant.

Traffic

The Illinois Central now operates 6,573 miles of line. It has a double track main line from Chicago and St. Louis to New Orleans except between Memphis, Tenn., and Jackson, Miss., the effect of double track is given by the parallel lines of the Yazoo & Mississippi Valley. In addition, there is a line extending westward across Iowa to terminals at Sioux Falls, S. D., Sioux City, Ia., and Council Bluffs, Ia. Other lines extend to Indianapolis, into Kentucky, and there is an extensive branch line development in Illinois. A line to Birmingham, Ala., connects with the Central of Georgia, controlled by ownership of all of the latter's outstanding common stock. The Vicksburg Route, acquired last year, extends from Meridian, Miss., westward to Shreveport, La., and its westward portion constitutes the first extensive extension of the system (south of the Iowa mileage) west of the Mississippi river.

The road carries a diversified traffic, the 1926 proportions being as follows: Products of agriculture, 12.48

per cent; animals and products, 2.15 per cent; products of mines, 48.55 per cent; products of forests, 13.92 per cent; manufactures and miscellaneous, 19.53 per cent and l. c. l., 3.37 per cent. Bituminous coal constituted in 1926, 34.54 per cent of the total tonnage but there is no other single commodity the percentage of which to the total equals even 10 per cent. Fast freight service is important. The road offers with its competitors a 29-hour service between Council Bluffs, Ia. and Chicago, 512 miles, and from New Orleans to Chicago, 912 miles, it has a 55-hour schedule which permits third morning delivery. It secures its coal tonnage from the southern Illinois field and from the western Kentucky field, the former being union is handicapped by high wage scales and recently idle, while the latter is non-union. In the five-year period ended with 1926, the loadings from the western Kentucky mines have increased from about 20 per cent of the total to about 45 per cent. The coal tonnage carried in 1926 was about 12 per cent larger than in 1925, but slightly less than in 1920 or 1923. Of striking interest is the fact that in spite of the stoppage of the southern Illinois union operations, the Illinois Central has been moving more coal in 1927 than in 1926. Car loadings by months show the expansion of traffic during the first three months in anticipation of the strike in the union fields which began on April 1, but that since, the traffic, while less than during the first three months has been running ahead of last year. In only 10 of the 32 weeks to the middle of August have total revenue car loadings been less than last year. The figures by months follow:

Table I—Illinois Central Operating Results, Selected Items, 1923 to 1926

	1923	1924	1925	1926
Aver. mileage operated	6,209	6,218	6,243	6,436
Total operating revs.	$186,763,167	$173,838,132	$178,169,625	$186,632,490
Total operat'g expenses	150,023,276	134,024,921	135,382,527	143,119,862
Net operat'g revenues	36,739,890	39,813,211	42,787,099	43,512,628
Railway tax accruals	11,048,431	12,722,493	12,729,951	12,344,721
Ry. operating income	25,664,062	27,033,816	30,018,803	31,120,465
Hire of freight cars—Dr. bal.	1,795,583	Cr. 295,580	1,168,392	2,182,624
Net railway operating income	24,863,440	28,102,073	29,926,943	30,194,551
Dividend income	2,164,737	1,214,722	1,214,722	1,714,722
Total non-operating income	4,907,859	3,577,826	3,623,813	4,540,606
Gross income	29,771,299	31,679,900	33,550,757	34,735,157
Rent for leased roads	1,704,438	1,758,575	1,770,246	2,384,587
Interest on funded debt	12,192,089	12,922,536	13,609,364	14,525,000
Total deductions from gross income	14,286,225	15,431,342	15,999,014	17,584,758
Net income	15,485,074	16,248,558	17,551,743	17,150,399
Dividends on preferred stock	624,204	1,276,740	1,486,332	1,569,909
Dividends on common stock	7,666,438	7,876,286	8,587,961	8,977,801
Earnings per share on common stock	$13.56	$13.39	$12.86	$12.06
Total revenue tons carried	60,519,065	55,615,045	58,207,077	61,893,432
Bituminous coal, tons	22,170,520	17,604,948	18,899,141	21,378,139
Per cent coal of total tons	36.64	31.66	32.47	34.54
Revenue ton-miles (thousands)	16,151,798	14,284,712	14,891,945	15,779,569
Revenue passenger-miles (thousands)	1,019,621	970,793	954,302	966,350
Rev. per ton-mile, cents	0.884	0.924	0.921	0.919
Transportation ratio	37.45	36.47	35.07	34.63
Operating ratio	80.33	77.10	75.99	76.69
Per cent net railway operating income to total operating revs.	13.2	16.2	16.8	16.2

Revenue Car Loadings—Illinois Central System

Number of weeks	Coal		Total	
	1927	1926	1927	1926
January—4 weeks	34,357	33,492	134,139	125,984
February—4 weeks	34,170	24,715	134,195	127,087
March—4 weeks	35,913	23,706	140,526	125,265
First 3 months' totals	104,440	81,913	408,860	378,336
April—5 weeks	23,697	25,059	149,742	150,311
May—4 weeks	16,858	16,490	120,805	125,569
June—4 weeks	19,849	15,788	124,565	119,510
Second 3 months' totals	60,404	57,337	395,112	395,390
July—5 weeks	27,717	22,940	158,886	153,152
August—2 weeks	10,879	11,471	64,982	66,618
Thirty-two weeks' totals	203,440	173,661	1,027,840	993,496

1927 Earnings

The following table gives a comparison of the operating results for the first six months of 1927 with the first half of 1926. It will be observed that the freight and total operating revenues were greater this year than last; that the maintenance of way expenses were less and that while the transportation expenses were greater, the transportation ratio was less. The operating ratio, also, was less, this improvement being in spite of the burden of expenses incident to fighting the Mississippi floods.

Revenues and Expenses, First Six Months

	1927	1926
Average miles of road operated	6,584	6,307
Freight revenue	$69,833,466	$67,668,932
Passenger revenue	13,578,661	13,874,558
Total, including other revenue	$89,930,795	$88,343,115
Expenses, maint. of way	11,511,114	12,579,478
Maint. of equipment	20,073,772	19,913,860
Traffic expenses	1,879,506	1,739,427
Transportation expenses	32,882,321	31,636,690
Total expenses, including other	$69,343,280	$68,562,124
Net revenue from operations	20,587,515	19,780,991
Taxes	6,224,837	6,005,320
Railway operating income	14,337,184	13,757,289
Net railway operating income	$13,425,596	$13,578,688
Transportation radio	331	35.8
Maintenance of way ratio	12.8	14.2
Operating ratio	77.1	77.6

Capital Expenditure Program

During the past four years the Illinois Central has spent $168,444,751 for additions and betterments, a sum sufficient to equal 38 per cent of the book value of investment in road and equipment at the end of 1926. While expenditure on such a scale may prove a temporary burden it may be expected to result ultimately in assisting the carrier that makes it to maintain a position of leadership in service and operating efficiency. The expenditures for additions and betterments in connection with the Chicago terminals, both freight and passenger, have now totaled about $50,000,000 and much still remains to be done. The suburban passenger line is now electrified and multiple unit operation in use as far as Matteson, Ill., 28 miles, although through trains still come into the Central Station at Roosevelt Road (12th Street) with steam power. The construction of a new passenger station is still under consideration pending decision regarding which other roads beside the Illinois Central may care to use it. The Chicago terminal plans call for considerable improvement and expansion of freight facilities. Most of this work—the largest unit of which has been the construction of Markham Yard—is about completed. However, the Illinois Central will have to electrify its freight operations north to Roosevelt Road by 1930 and from Roosevelt Road to Markham Yard by 1935. The Illinois Central electrification is expected to yield a large return in the form of air rights.

Another important project has been the construction of the Fulton-Edgewood cut-off. This project which has cost about 22 million dollars, is intended to simplify operation and shorten the haul on a large proportion of traffic. It is a single track with a 0.3 per cent grade in place of present maximum grades of 1.2 per cent, and will save 22 miles on the traffic moving over it. It extends south from Edgewood, Ill., on the present

main line, north of Centralia, crosses the Ohio River at Paducah, Ky., and joins the main line again at Fulton, Ky. The line is already in operation between Fulton and Paducah.

Financed Largely with Preferred Stock

The Illinois Central has particularly evidenced its financial strength in the manner in which the elaborate improvement program has been financed, largely with 6 per cent non-cumulative preferred stock. This stock was authorized in the amount of $50,000,000 on April 19, 1922, and sales of it have been made as follows: June, 1922, $10,929,600; October, 1923, $10,952,180, and December, 1925, $11,933,700. The stock was sold to stockholders at par. It is convertible into common stock par for par, and is redeemable at 115 after September 1, 1927. A considerable amount has already been converted, about 4 million having been converted, for instance, during 1926. On December 31, 1926, the amount of preferred stock outstanding was $25,263,800. This stock, as noted, pays 6 per cent dividends and sells at about the same price as the common. The common stock outstanding on December 31, 1926, totaled $129,-181,600 making the total stock $154,444,191. On the same date the funded debt outstanding totaled $367,208,-344, equal to 71 per cent of the total capitalization. Since December 31, 1921, the funded debt has increased 147 million but because of the financing with preferred stock the proportion of funded debt to total capitalization has remained unchanged. The Illinois Central is so favored that the average interest on its long term debt totals only 4.45 per cent.

Some Open Questions in Rail Specifications

By C. W. Gennet, Jr.
Manager Rail Department, Robert W. Hunt Company, Chicago

AS the season approaches when most railroads contract for their year's supply of rails, the question is pertinent as to what can be purchased to carry the traffic best. Time was, not so very long ago, when rail users had little from which to choose in the way of specifications or other details, but the changing times have brought about innovations of much more than general interest, and engineers, of small consumers as well as large, can easily adopt certain practices which are almost certain to result in improved conditions.

One outstanding phase of the situation at present is the rail manufacturers' willingness to co-operate with the customer to the fullest extent by endeavoring to satisfy the smallest desire, whether on actual specification matters or something else. Certainly the old feeling that a small customer might have to "take what the mill offered" has long since been changed to a policy of giving what a customer desires. This, however, must not be interpreted too broadly for, plainly, the continuation of certain standards of practice around a mill is just as important as in running a railroad. Frequently extra prices are required for various requirements not strictly in line with recognized practice and the argument, if any, is more apt to be on the amount of the extra and the real justification for it, than on the principle involved.

The three most important subjects to engage attention of rail purchasers this year are: (1) Heavy rails, meaning rails of 100 lb. per yard and over; (2) eliminating the customary "A" rails by arranging for that metal to be furnished in tie plates; (3) the use of medium manganese steel, that is, steel containing 1.30 to 1.60 per cent manganese with a proportionate decrease in the carbon content.

Tonnage of Heavy Rails Increasing

A rather interesting commentary on the rail situation appears in production figures which show that the use of heavy rail has increased very greatly in the past few years. Thus, in 1920, only 28 per cent of the 2,604,116 tons rolled was heavy rail, while in 1926 a little over 61 per cent of the 3,217,649 tons rolled was of this heavy rail. The result shows that railroad engineers have been quick not only to interpret some of the findings of the Committee on Stresses in Track, but to also realize that through the use of heavy rail a way may be found to reduce maintenance expense.

There is no question but that heavy rail is expensive. Not only is the original cost much greater, but the increased cost of the fastenings is an additional item, and probably handling, or track laying, is considerably more. The stiffer and less yielding track, readily kept in good line and surface with possibly one or two less section men, offers an inviting offset. But heavy rails as a cure-all for manifest troubles are something of a disappointment. Disregarding the increased amount of metal, which is naturally a retardant for certain types of failures, heavy rails seemingly possess all the characteristics of the lighter ones and to some extent offer more inclination for the development of certain failures.

Almost invariably the rolling of heavy rails has been coupled with such an increase of carbon that the recognized saturation point of the iron solution has been reached before any effect of segregation has taken place. Thus, the top rails of ingots cast from a heat of, say 0.85 per cent carbon steel may easily contain a region where the carbon content is well over one per cent, so that a considerable part of the rail section is in reality of tool steel, or knife blade, quality and brittleness. The general use of large ingots at the mills has considerably aggravated this condition and although the strength of the rail section may be sufficient to carry the load, the fact remains that an exceedingly stiff, hard and non-ductile rail may be unintentionally laid. Some proof of this lies in experience at the drop test, from which it can readily be shown that where the carbon reaches about 0.80 per cent, failures are more apt to occur on the tests of the heavy sections. Fissures are apparently as common in the heavy rails as in the lighter sections, and the prevalence of the other types of failures certainly indicates that heavy rails cannot be laid with a feeling of complete immunity from further trouble.

Rolling "A" Rails Into Tie Plates

Much has been said in favor of eliminating the ordinary "A" rails by utilizing their metal for hot-punched tie plates. Approximately 200,000 tons of heavy rails have been delivered this year in accordance with such an arrangement. It seems almost paradoxical but is a fact, nevertheless, that "A" rails quite invariably cause over half of all the rail trouble, yet they comprise less than 15 per cent of the total rails laid. Certainly, no similar condition would be tolerated knowingly in the purchase of any other commodity.

With the large ingots of high carbon steel mentioned and the increasing trend towards heavier rails, the actual condition is becoming steadily worse. For example, a mill that makes seven 90-lb. rails from an ingot, will make only five 130-lb. rails, so that the "A" rails constitute 14 per cent of the total in the first case as against

20 per cent for the 130-lb. rail. This means that the tonnage of "A" rails in 100 track miles of 130-lb. rail would be twice as much as if 100 miles had been laid with 90-lb. rails. In addition, the carbon content has probably also been increased for the heavier rails, with the result that more intense segregation may be expected. This proposed change from "A" rails to tie plates can be made quickly and easily. Whatever the reason may be for charging an extra price for rails made with the increased discard, the fact remains that circumstances from every point of view demand a reconsideration by the manufacturers and a more reasonable attitude on their part toward a subject of such moment to the railroads.

Medium Manganese Rails Coming Into Use

Medium manganese rails have received considerable trial on a number of roads under various track and traffic conditions although definite figures of results are not yet available in sufficient quantity or detail to enable fair conclusions to be drawn. Unquestionably, however, the rails so made are giving good service in many cases under severe conditions. The steel, containing as it does less carbon and more manganese, has much to commend it. Segregation in the ingots is naturally less and physical unsoundness perhaps improved. Maybe the "A" rails of medium manganese steel will eventually prove better than expected. The danger, if any, lies in obtaining steel too hard and brittle, but certainly the drop tests have rarely indicated such possibility and about all that can be said regarding this metal is that it holds the best of promise of fulfilling a long-felt want in the direction of affording a better wearing rail free from breakage. The most serious objection at present to medium manganese rails is the large extra price demanded, which is even more than that required for eliminating the "A" rails.

Influence of Traffic

Track and traffic conditions indisputably have a decided influence on rails. Roads with a minimum of sharp curvature, for instance, are in a far better position to cope with the supply of "A" rails than are roads in more mountainous territory where the curvature is so great as to make it difficult to confine "A" rails to tangent track. Again, on light traffic lines where axle loads have been kept well down, there appears to be no special need for heavy rails. Each road, therefore, offers an opportunity for a special study of rail conditions so that any specific suggestions for improvement must be weighed carefully in connection with other factors.

There are, of course, other well known rail innovations not referred to above that may be attractive. The addition of titanium to rail steel has in many cases been efficacious. Making the nick and break test on every ingot has been proven desirable as against any other method of attempting to locate unsoundness at the drop test.

Milling the ends of rails is becoming not only more common, but recognized by the mills as important in order to insure freedom from burrs and a good, clean and square finish on the ends, especially of the heavy section rails. Roller-straightened rails are receiving attention and rails have lately been made from big-end-up, hot top ingots. Altogether the subject of rails, the selection of a section and specification, never presented more opportunity for study and railroads this year have ample chance to look for economical improvement from many angles.

Telegraph and Telephone Section, A. R. A., Meeting

The Telegraph and Telephone Section of the American Railway Association held its annual convention at the Willard hotel in Washington, D. C., on October 4, 5 and 6, with the president of the Section, J. A. Jones (Southern) in the chair, and a total attendance of 248 and about 125 ladies, the largest attendance in the history of the Section. The Section was welcomed by Colonel William B. Ladue, district commissioner. The principal business of the opening session, following an address by R. H. Aishton, president, A. R. A., was the reading and discussion of a paper by P. J. Howe, construction engineer of the Western Union Telegraph Company, on Permanent Inorganic Wood Preservation. Mr. Howe briefly sketched the nature of wood decay and its problems and told of difficulties due to the high cost of creosote, and the unsatisfactory characteristics of zinc chloride. To meet the situation Dr. L. P. Curtin, chemist of the Western Union, has developed a process using toxic salts, which are insoluble in water and which are used in the same way that lead arsenate is used to kill insects. With zinc arsenate he has made a preservative, the toxicity of which is higher than that of either creosote or zince chloride. The solution penetrates wood much better than creosote and leaves the wood unchanged in color and appearance. The wood dries, in summer, in two weeks, and the chemical remains insoluble and permanent. It does not corrode steel. Experiments have been made also with compounds of copper and arsenic and also barium carbonate.

The Western Union has built an experimental pressure treating plant in which poles 25 ft. long can be treated, and most of the new processes have been tested for three years. They cost much less than creosote and 10 to 12 cents each can be saved on cross-arms. Timbers are left clean, suitable to be used anywhere, and to be painted. With the low cost Mr. Howe proposes to use pressure treatment on cedar poles and perhaps on chestnut. Poles are quite effectively fireproofed and their electric conductivity is not increased.

The paper referred also to other experiments in this field. In the discussion Mr. Howe, replying to questions, said that the new processes, which are patented, should be carried out under the direction of a chemist. The solutions should be made at the place where they are to be used.

Discussion of Message Traffic

Committee No. 6, on Message Traffic, G. D. Hood (C. R. I. & P.), chairman, presented a report describing methods of checking and expediting telephone and telegraph traffic. It was recommended that the directory for private exchange telephone systems be printed in loose-leaf form preceded by an alphabetic list of all employees' names and followed by a departmental list. The committee made an investigation of telegraph printers' work and the report included a detailed description of apparatus. The conclusion of the committee is that, "while there are many places on railroads where the page printing apparatus is required, it would seem that for small offices and way wire work, the tape printer offers greater possibilities for economical and successful operation, will be less likely to cause interruptions to service and will be less costly to maintain."

Recent Developments of Communication

The report of the Committee No. 5, on Communication Developments, S. L. Van Akin, Jr. (N. Y. C.),

chairman, submitted notes on 18 outstanding developments in this field during the past year. The practical operation of trans-Atlantic radio telephony, now in daily service, is mentioned as the first important development. A brief description of the new television system, successfully demonstrated on April 7, 1927, was given as information, with reference to the Journal of the A. I. E. E. for July, 1927, for a complete description. A combined lineman's portable testing device and telephone, incorporating several unique features, and a new type of transmission measuring set are now available. A device has also been perfected to measure the cross-talk between any two standard telephone circuits. Several devices have been produced to measure and analyze the noise on telephone circuits and to eliminate it by means of certain elements.

The Western Union has devised a method of preserving poles—forcing a solution of zinc and arsenic into the poles. Investigation indicates that on exposure of the treated wood to the atmosphere, chemical changes take place which deposit in the wood zinc arsenate, insoluble and permanent.

Instruction of Employees

Committee No. 10, P. F. Frenzer (U. P.), chairman, presented a report including instructions for the operation of keyboards of printer telegraphs and for training telephone operators for private branch exchanges.

Outside Plant—Construction and Maintenance

The report of the Committee on construction and maintenance, outside plant, E. C. Keenan (N. Y. C.), chairman, submitted reports from six sub-committees. These included: a specification for pressure treatment of poles with creosote, and one for the treatment of timber other than poles. Instructions were included on the splicing of lead-covered cables. Lengthening the life of non-treated poles now in service, was discussed—the surface brush treatment, the spray method, the charring and spraying system, and the injection treatment. On a test section of chestnut and cedar poles, it was found, three years after treatment, that the charred and sprayed poles were all sound. Various methods of encasing poles at the ground line with concrete, tar or metal failed to meet the approval of the committee.

Sub-committee C submitted a specification for creosoted wood conduit and pine plank while sub-committee D submitted a revised specification for transposition of telephone wires. Sub-committee F has revised the instructions for construction of pole lines.

Inside Plant—Construction and Maintenance

The Committee on construction and maintenance, inside plant, G. R. Stewart (I. C.), chairman, submitted reports of four sub-committees as follows: Sub-committee G, seven specifications, including resistance A. R. A.-29, Reserve double conductor cord, single conductor cord, rubber tape, jack, composition jack panel, telegraph table, dispatcher's table and dummy plug. Sub-committee H, specifications for layouts of tables, etc., in general and relay offices, private automatic telephone rooms and for dispatchers' offices. Sub-committee J, specifications for the installation and maintenance of motor generators, instructions for installers and specifications for maintenance of composite sets. Sub-committee K, specifications for the installation and maintenance of concentration units; for shunt locking, single line full repeaters and half sets.

Committee No. 4, on electrical protection, J. F. Caskey (L. V.), chairman, presented a specification for the installation and maintenance of grounds and methods of testing.

Committee No. 7, on Inductive Interference, L. Behner (Penna.), chairman, reported on inductive effects from nearby power lines, suggesting potential neutralizing conductors and ground potential regulators. The report described methods of mitigating severe acoustic shocks on telephone lines, due to surges on adjacent power systems.

All of the foregoing reports were accepted with immaterial changes.

The principal features of the second day, aside from questions asked committees, were the reading of a paper by Dr. H. C. Frankenfield, senior meteorologist of the Weather Bureau, on The Weather Bureau as a Factor in the Operation of Railroads and Telegraphs, and the showing by the Union Switch & Signal Company of its motion-picture illustrating the operation of trains on single track by "dispatcher control"—the employment of station switch tenders and telegraphers being rendered unnecessary by use of remote operation for both switches and signals.

The annual banquet held on Wednesday evening was largely attended. The guest of honor was Curtis D. Wilbur, Secretary of the Navy, who made an interesting address on the use and value of electric communication on warships of the telegraph in keeping Washington in constant touch with vessels all over the world and of radio in all its manifold applications. He estimated that the service to the government in relieving distress in the lower Mississippi valley this year had fully justified all its expenditures that the Navy Department had made for radio.

The proceedings of the third day of the convention must be deferred to a future issue.

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Front Elevation of N. Y. C.'s New Building, New York

Safety Work Reduces Drain on Railway Resources

The mental and physical condition of employees is as important as carelessness in accidents

Three-Position Highway Signal Used on Canadian Pacific

THE hope of success for safety work among railway employees lies in appealing to the instinct of self-preservation that is inherent in all mankind, the very nature of the railway business being such that the ultimate in safety cannot be achieved alone by the installation of safety appliances, according to L. A. Downs, president of the Illinois Central, speaking before the Steam Railroad Section of the sixth annual safety congress of the National Safety Council at Chicago on September 27, 28 and 29. The meeting, which was attended by approximately 300 representatives of the railroads, was also addressed by L. C. Fritch, vice-president of operations of the Chicago, Rock Island & Pacific; R. C. White, assistant general manager of the Missouri Pacific; H. Johnson, president of the Duluth & Iron Range; M. O. Lorenz, director of the Bureau of Statistics of the Interstate Commerce Commission; J. G. Dowdall, M.D., chief surgeon of the Illinois Central; Z. B. Claypool, assistant director of the accident prevention department of the St. Louis-San Francisco; and Mrs. C. F. Longstreth of St. Louis who spoke on women's place in safety.

During the morning session of the first day, the following officers were elected: Chairman, E. R. Cott, supervisor of safety, Hocking Valley, Columbus, Ohio; vice-chairman, J. E. Long, superintendent of safety, Delaware & Hudson, Albany, N. Y.; and secretary, C. F. Larson, superintendent of safety, Missouri Pacific, St. Louis, Mo.

During the round table discussion, favorable reports were made by several railroads that have adopted the one long, two short and one long blasts of the locomotive whistle at grade crossings. The Chicago, Burlington & Quincy, for instance, has cut crossing deaths 50 per cent in the short period that this whistle has been used on that system and a number of motorists have written the company thanking it for the adoption of the new signal. Several roads have encountered objections to the prolonged blast from people living near the tracks, but it was felt that this opposition was raised by those who objected to any type of whistling. The Chicago, Burlington & Quincy has overcome such antagonism by the introduction of an air whistle with a softer tone.

A number of railroads reported that the liberal use of vaseline on the hands and face has eliminated irritation caused by the handling of creosoted ties and timber. Vaseline was thought to be more effective than the wearing of heavy leather gloves.

The damage to equipment and lading which occurred at a classification yard on the New York, New Haven & Hartford, because of defective hand brakes, has been reduced from $1,000 per day to $50 per day by changing the methods of inspecting the braking apparatus. Under the new plan one man operates the hand brake while two other men on the ground note the action. Previously, the three men inspected the train separately.

The adoption of a continuous cutoff lever that can be operated from either side of the freight car, to keep the trainman from stepping between cars to adjust couplings, was urged. It was believed that this type of lever could be added to new freight equipment at only a slight additional cost.

C. E. Hill, general safety agent of the New York Central, in speaking on the prevention of highway crossing accidents, said that the immediate relief from this type of casualty is through a co-operative procedure between the railroads and the public. The chief success in the prevention of accidents to railroad employees lies in the spirit of co-operation between employer and employee and if the railroad's contact with automobile drivers was as close as it is with its employees and the response toward co-operation was proportionate, grade crossing accidents would be reduced to an infinitesmal number.

Experience in industrial safety, he said, shows that after engineering work has been done, the causes ascertained and the conditions corrected, the problem is one primarily of constructive education. Since education is the real fundamental upon which effective safety work can be based, one must know his employees and also how the public can be educated. The railroads have a keen sense of their responsibilities, not only to their employees but to the public as well. They have made accident prevention prove the efficacy of their plans. If a similar procedure were followed as regards accidents that more directly involve the public, it would mean the weeding out of a large army of incompetent and reckless motorists that infest the streets and highways, thus assuring a greater degree of safety for the large majority. This would immediately bring about a marked decrease in the number of street and highway accidents and would result in the saving of many thousands of lives each year.

Mr. Downs first placed emphasis upon the human value of safety work but also gave full regard to its material value. Good safety work, he said, tends to

reduce the drain upon railway resources and also helps to safeguard the utility of productiveness of one of the most valuable assets of the railroads, their trained personnel. Every railway employee represents an investment of time and money spent in training him for his work. That investment is lost when the worker is killed. It is idle and unproductive when he is incapacitated by injury and it has a greatly depreciated value when he returns to work handicapped by injury. Loss of productiveness from this investment may seem a small thing in one individual's case out of a large organization but in the aggregate the loss may be large.

He said that the hope of success for safety work among railway employees lies in appealing to the instinct of self-preservation that is inherent in all mankind. The very nature of the railway business is such that the ultimate in safety cannot be achieved by the installation of safety appliances. Neither, he continued, can employees be warned specifically against all the possible hazards of accident they may encounter. This is true because the contingencies that may present themselves in the course of a day's work on a railroad are almost unlimited. The only practical solution of the problem is to train employees in the habit of making certain of their own safety and of the safety of their fellow workers under all conditions. Safe practices must be instinctive. Human intelligence can adapt itself to circumstances better than any mechanical appliance that could possibly be devised. Train new employees properly and it will be only a matter of time until the organization will consist entirely of men who are habitually safe workers.

He believed that it would aid the advancement of safety work as a whole if the administration of discipline were more frequently invoked for violation of safety instructions. Disciplinary penalties for infractions of safety rules are now assessed chiefly in cases where such infractions result in accidents. This has the effect of punishing the men concerned for the consequences of their faults instead of for the faults themselves.

He expressed his appreciation for the "Cross Crossings Cautiously" campaigns and other efforts primarily intended to reach adults, but placed greater value upon the safety work that is being done in the schools. Here, he said, boys and girls are reached in their most impressive years. By good safety work in the schools, the minds of thousands of future citizens can be imbued with an enduring appreciation of the importance of safeguarding themselves and others at all times.

Mental Attitude Affects Safety

Mr. Johnson stated that a willing co-operative state of mind brings about the ideal situation for an accident prevention program. A great deal of importance, he said, is attached by most authorities and students to the foreman in charge and directing the energies of a unit of employees. The bulk of the onus of securing accident prevention is often attached to the foreman, without much regard to the material comprising his force.

He said there is a great difference of opinion as to whether carelessness is the cause of most accidents. Authorities disagree as to whether or not carelessness causes a large number of preventable accidents. What one man calls carelessness another regards as a psychological condition due, undoubtedly, to unfortunate working, home or health conditions, or to a limited mental capacity. He was of the opinion that the attitude of the worker at his daily task is largely dominated by psychological conditions and is determined to a large degree by the environment by which he is surrounded. He referred particularly to the fact that a clean, orderly shop is conducive to a satisfactory mental attitude. Likewise the man who is interested in the activities of the company, such as baseball, basketball, bowling, swimming and the employees' association, usually is inclined to be satisfied with his lot and to work along with a keen sense of appreciation and a keen mind, ever watchful for the welfare of himself and others.

He was thoroughly in accord with the recommendations of the Medical and Surgical Section of the American Railway Association, suggesting that railroads require a proper physical examination of all men in their service. A thorough study of these examinations, he said, made by competent doctors, will indicate to a very large extent the physical and mental condition of the employee and will necessitate careful consideration on the part of the management in placing employees in occupations where their health will permit them to work with safety.

The mind and body of a man are not always synchronized, thus causing unnecessary and improper movements which are the primary cause of accidents. The synchronization of mind and body resolves itself into the elimination of accidents through mental training and through the increase in efficiency by eliminating unnecessary movements.

Mr. Johnson also said the question of the habits of employees when not on duty is a matter that is of vital importance in the accident records of the railroad. It is necessary to be temperate in all matters of life.

Safety Is a Personal Proposition

Safety, in the final analysis, is a personal proposition that must be so looked upon and accepted, said Mr. Fritch. Personal contact with and the education of those who handle every-day work of the American railroads, he said, is the needed agency through which success will most assuredly come. Managements and supervisory forces must realize this principle and lend support to its acceptance and advancement.

Lectures, employee meetings, public safety gatherings, literature and statistics, are all beneficial but personal contact between the representatives and those who must be interested is more important than these other agencies.

The railroads, he continued, are willing to do everything they consistently can to prevent accidents on railway and highway crossings. The driving public must recognize that the real responsibility for the prevention of such accidents lies with them and not with the railroads. The education of the public is a recommended medium through which the highest degree of success can be attained. To teach safety in the schools is but to embrace and to employ modern means and methods to insure the rising generation being more thoughtful and considerate for their own personal safety and the manifestation of that same interest towards others.

Statistics Vital in Prevention of Accidents

Mr. Lorenz cited four ways in which accident statistics may be of help in safety work. They can be used—(1) in showing the most serious classes of accidents; (2) in determining the causes of acidents; (3) in showing the progress resulting from safety efforts and thereby justifying renewed efforts, and (4) in stimulating efforts by competitive comparisons. To further explain the first three uses, he said that statistics show that in 1926 over 1,000 caualties to employees occurred from operating switches, and the analysis of causes shows that in about a third of the cases, the switch lever or ball fell or caught on the foot or other part of the operator's body. This would indicate the need of a special campaign on how to operate switch levers or some invention

to make them safer. Figures show progress, and when a greater effort is made to reduce the number of accidents, it helps to keep up interest and enthusiasm.

Dr. Dowdall Stresses Physical Fitness

Dr. Dowdall showed how the good physical condition of employees can reduce accidents. He said in part:

"Foremost in the prevention of accidents is the question of the physical fitness of the individual employee. I believe that we will all readily admit that ill health or even temporary disability greatly increases the hazard of accidents which result from man failure. Good health in an individual is of inestimable value to himself and his employer. Ill health decreases efficiency, results in nervousness, irritability of mind, and often causes one to do something erratic or impulsive. The result is an error or accident. The healthy man is a safe and reliable man.

"The second most important factor in promoting safety by increasing physical efficiency is the medical re-examination of the old employees, particularly those engaged in the engine, train and signal service. In the past there has been opposition by the brotherhoods to such general medical re-examination on the theory that it might cause some physically defective employee to lose his job. However, in the past few years there have been a number of serious accidents entailing a considerable loss of life as well as large property damage. The resulting investigations have shown that these accidents were caused by the failure of man power and that this failure was due to some pre-existing disability and further, that a previous medical examination would have disclosed the presence of this disease which constituted a greatly increased hazard.

"An analysis of a somewhat recent medical re-examination of a comparatively small group of old employees, engineers and conductors, showed some interesting facts. The engineers showed markedly the results of over-eating. Of this group, 90 per cent of the engineers are over-weight, 60 per cent weighing over 200 lb.

Practically all of them were found to eat daily about three times the required amount of food. The percentage suffering from diabetes was found to be unusually high and all of this group of engineers had blood pressure well above the normal.

"The conductors were also over-weight but not to the extent of the engineers. This is due, no doubt, to the fact that as locomotive firemen doing hard physical work they develop large appetites and upon being promoted to engineers they sit down but continue to eat about the same amount. Both classes were found to have a high percentage of infected teeth. Tobacco was used excessively and positive Wassermann tests of the blood showed an unusually high percentage.

Duties of Surgeons

"The surgeon is directly concerned in the matter of reducing temporary disability by getting the injured employee back to work as promptly as possible, proper consideration being given to the disability present. The careful attention of the surgeon in handling each case is of the greatest importance. The first man interested in getting the injured man back to work should be the surgeon. This is not the proper function of the foreman or employing officer. All of you who are experienced in safety work realize the mental attitude of a certain number of employees when they are injured. The attitude of many of these employees is first, that they have a claim against the company and also, perhaps, some accident insurance coming to them. A third factor, even with an honest employee, and especially in the winter time, is that he does not feel very well and it is easier to sit beside the fire with his family than it is to make the effort to get back to work. Then, too, there is the question of uncertainty in the mind of the injured man with reference to whether he has a serious or perhaps a permanent disability, added to which is the sympathy of his fellow employees.

"The wide awake surgeon will know something of the various types of railroad work so that he can talk intelligently to the injured man regarding his ability to get back to work within a reasonable length of time. The doctor must analyze the situation both from the standpoint of the injured man as well as the company. He must know there is a place that the injured man fills and that it is expensive to bring in another man and train him for that particular job. The surgeon will honestly consider the interests of his patient in keeping with his professional traditions. He will always bear in mind the importance of getting the injured man back to work with as little loss of time as is consistent with the conditions present. The company must be willing to take back the injured man and put him on the job, even though he is not able to function 100 per cent. There is no cure for an injury better than getting the injured man back to work and keeping him interested in his job.

Block Signal Mileage Issued for Year, 1926

THE Interstate Commerce Commission has issued its regular annual tabulation of statistics, prepared by the Bureau of Signals and Train Control Devices, showing the mileage of railroad in the United States operated under the block system as of January 1, 1927, together with collateral information; and also the mileage of railroad on which telephones are used for the transmission of train orders. The corresponding report for the preceding year was noticed in the *Railway Age* of November 20, 1926, page 1006.

The length of railroad operated under the block system on January 1, 1927, was almost exactly the same as the total 12 months before, the increase in automatic signals being offset by the decrease in the use of the manual block system. There are in the table only two major items in which there was an increase in the use of the non-automatic block system: Chesapeake & Ohio, 43 miles, and Pere Marquette, 25 miles. From this it would appear that the 140,288 miles of road in the country on which no use is made of the space-interval, are largely lines of such light traffic that their owners consider that the present methods of operation afford a reasonable degree of safety.

On January 1, 1927, the total length of road having automatic block signals was 49,466; total non-automatic, 61,362; grand total 110,828. The increase as compared with January 1, 1926, was, in automatic mileage, 3,869.2 and the decrease in non-automatic 3,865.6, making the net increase in total block signal mileage 3.6 miles.

The bulletin gives the usual table showing sections of road, block signalled, which are operated jointly by two or more railroads. One of these items is that of the Great Northern and the Northern Pacific, over 200 miles, joint track, equipped with automatic block signals.

Our table lettered A is from page 2 of the bulletin, showing the more important increases and decreases during year 1926, all the figures representing miles of road.

Table A—Principal Increases and Decreases (Miles of Road)

Name of Road	Increase		Decrease
	Automatic	Non-automatic	non-automatic
Atchison, Top., & Santa Fe	322	....	205
Atlantic Coast Line	111	....	....
Baltimore & Ohio (Western Lines)	228	....	230
Bingham & Garfield	16	....	....
Canadian Pacific	64	....	....
Central of Georgia	10	....	8
Chesapeake & Ohio	63	43	....
Chicago, Burl., & Quincy	186	....	177
Chicago, Mil., & St. Paul	....	....	75
Erie	29	....	29
Florida East Coast	379	....	....
Great Northern	272	....	9
Illinois Central	108	....	1
Yazoo & Miss. Valley	105	....	....
Long Island	7	1	....
Louisville & Nashville	79	....	8
Missouri-Kan.-Texas	10	....	....
Missouri Pacific	354	....	201
Mobile & Ohio	51	....	....
Nashville, Chatt., & St. L.	137	....	32
New York Central	48	....	25
C. C. C. & St. Louis	170	....	167
N. Y., N. H. & H.	19	....	31
Central New England	....	....	21
Norfolk & Western	103	....	157
Pacific Electric	12	2	....
Pennsylvania System	111	....	175
Pennsylvania (Ohio Electric)	15	....	6
Pere Marquette	34	25	....
Seaboard Air Line	215	....	....
Southern	180	....	217
New Orleans & N. W.	66	....	....
Southern Pacific (Pac. Sy.)	297	....	66
Galveston, H. & San A.	149	....	150
Houston & T. C.	54	....	52
Texas & Pacific	24	....	21
Wabash	76	....	57
Western Ry. of Ala.	28	....	....

Table No. 2 of the report, showing kinds of automatic signals in use, covers 49,466 miles of road and 76,994 miles of track. The classes show up as follows: exposed disk, 210 miles; enclosed disk, 1,344 miles; electro-pneumatic, 457; electric motor, 38,202 miles; miles; electro-gas, 759 miles; not classified, 8,695 miles.

This last item of 8,695 miles is supplemented by a separate table showing, for each road, the mileage of color-light signals, position-light signals, color-position-light signals and visual cab signals. This supplementary table, omitting roads on which the length reported is less than 10 miles, is copied herewith (Table B), together with two columns added containing data from preceding reports enabling the reader to note the progress that has been made since 1924.

Table B—Light Signals (Wayside) and Cab Signals (Miles of Road)

Name of Road	Jan., 1927 Light signals	Jan., 1927 Visual cab signals	Jan. '26 Light signals	Jan. '25 Light signals
Atchison, Top. & Santa Fe	465	142	422	388
Baltimore & Ohio				
Eastern Lines	3 cpl.			
Western Lines	246 cpl.	42 cpl.	....	....
New York Terminal Lines	23 cpl.			
Boston & Maine	5	99	....	....
Buffalo & Erie	71	....	....	....
Central of Georgia	13	....	....	....
Central of N. J.	69	66	66	....
Chesapeake & Ohio	144	....	82	131
Chicago & North Western	54	149	54	44
Chicago, Aurora & Elgin	18	....	....	....
Chicago, Burl., & Quincy	476	....	277	179
Chicago, Mil., & St. Paul	570	108	570	596
Chicago, No. Shore & Mil	12	....	....	....
Chicago, Rock Is. & Pac	12	....	8	....
Chicago, So. Shore & So. Bend	25	....	....	....
Delaware, L. & W	20	141	14	9
East St. Louis & Suburban	4	....	....	....
Erie	32	....	....	....
Florida East Coast	379	....	....	....
Fort Dodge, Des Moines & So.	17	....	17	17
Great Northern	1,120	....	833	557
Illinois Central	316	219	320	315
Indiana Service Corporation	50	....	50	50
Lehigh Valley	61p	....	42p	29p
Long Island	....	21	....	....
Louisville & Nashville	47	162	47	31
Mass. No. E. Street	66	....	66	65
Missouri-Kan-Texas	6	....	....	....
M-K-T of Tex	9	....	....	....
Missouri Pacific	473	....	....	....
Mobile & Ohio	51	....	....	....
Monongahela	11p	....	10p	10p
Nashville, Chatt. & St. L	137	....	....	....
New York Central	432	....	307	141
Boston & Albany	10	....	10	4
C. C. C. & St. L	190	....	....	....
Michigan Central	44	....	44	....
Pittsburgh & Lake Erie	18p	....	10p	10p
N. Y., Chicago & St. Louis	13	....	12cpl	10cpl
N. Y., N. H & H	33	62	....	....
Norfolk & Western	339p	239	237p	107p
Ohio Valley Electric	17	....	17	11
Oregon, Wash. R. R. & Nav	....	84	....	....
Pacific Coast Railroad	13	....	13	13
Pacific Electric	41	....	29	29
Pennsylvania	13	....	13	16
Pennsylvania	551p	81	303p	250p
Pere Marquette	55	....	18	18
Raritan River	12	....	12	12
Reading	8	55	....	....
Richmond, Fred. & Potomac	83	....	....	....
San Francisco-Sacramento	85	....	85	85
Seaboard Air Line	268	....	53	....
Southern	928	....	190	84
Southern Pacific	152	....	67	39
Terre Haute, Ind., & E. Tract	60	....	60	60
Texas & Pacific	21	....	....	....
Union Pacific	....	225	....	....
Los Angeles & Salt Lake	2	....	....	....
Union Traction Co. of Ind	82	....	82	82
Wabash	65	....	23cpl	....
Washington, Balt. & Annapolis	50	....	50	50
Wheeling Traction Co	52	....	52	52

p—Position-light.
cpl—Color-position-light.

Telephones. On January 1, 1927, telephones were used for the transmission of train orders on 143,374 miles of road, while the telegraph was still in use on 113,659 miles. Many roads report both methods still in operation on the same section of railroad. The total of road operated by the companies represented in this table amounts to 247,713 miles.

The final table in the report, table No. 7, shows, for each of the 44 roads which have installed automatic train control, the mileage of road, number of locomotives, etc., as called for by both of the commission's orders relative to automatic train control, namely, that of June 13, 1922, and that of January 14, 1924. This table, unlike the others in the bulletin, brings data down to July 1, 1927. Its totals are: Miles of road to be equipped 8,360; miles of road equipped 7,404; locomotives to be equipped 6,987; locomotives equipped 6,066.

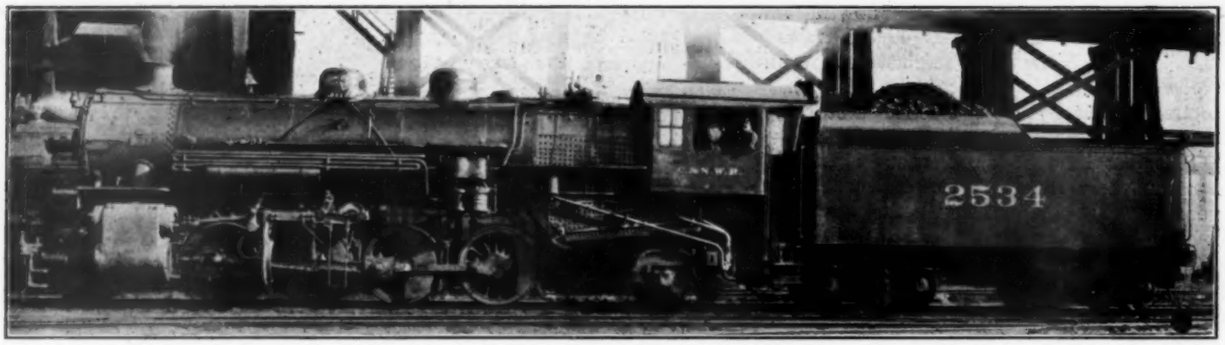
Lack of Precautions Results in Motor Car Accident

ACCORDING to a report of the Bureau of Safety of the Interstate Commerce Commission, the collision of a light engine with a gasoline motor car on the Chicago Great Western on July 21, which resulted in the death of five employees, was due to a failure on the part of the motor car crew to take proper precautions for its protection. At the time of the accident the motor car, which was hauling a mowing machine, was moving eastward within yard limits at Cannon Falls, Minn., on a four-degree curve in a cut about four feet deep. However, the growth of tall weeds at the top of the cut slopes restricted the view to about 100 ft. from the engineman's side and about 250 ft. from the fireman's side of an engine approaching from the east. The motor car with the mowing machine, which was being pushed ahead of it, was manned by a crew of five men, including a track supervisor, a section foreman and three laborers, all of whom were apparently so engrossed in the work being done that they failed to note the approach of a light engine from the east which collided with the mowing machine and motor car killing all five men.

Line-up Out of Date

Investigation showed that the section foreman had asked for a line-up of the trains at 8 a. m. on the day of the accident, but took no steps to have this brought up to date at any time during the day. The accident occurred at about 4:10 p. m. The testimony also brought out that only three men were required to operate the mowing machine and that in consequence there was no reason why two of the crew of five might not have been employed for flag protection as definitely required by the rules of the Chicago Great Western governing the operation of motor cars in the absence of a line-up when on curves or in other dangerous places. The report definitely places the responsibility for the accident on the track supervisor and the section foreman for failure to protect the motor car as well as on the engineman for failure to operate a light engine under control within yard limits.

THE CHARLES A. COFFIN ANNUAL PRIZE (gold medal and $1,000) which is given by the General Electric Company, was awarded this year to the Grand Rapids Railway Company, Grand Rapids, Mich., which company has made great advances from a low financial condition which existed three years ago. The company has introduced trolley cars of an improved design; stockholders and employees have co-operated to cure defects and wipe out burdens, and the public has quickly responded to the new order of things. Accidents on the company's lines were reduced in 12 months, 22 per cent, and free uniforms are given to employees who have clear accident records for a certain number of months.



Western Firemen Present Wage Demands to Arbitration Board

Carriers contend present wages are adequate and show that Chicago joint working agreement is self-imposed restriction of earnings

THE purchasing power of the fireman's wage, the value of his services to the railroad through the increase in size of motive power, the improvement of his working conditions through labor saving devices, the ability of the carriers to bear a wage increase at this time and the Chicago joint working agreement bore the brunt of attention from counsel for the railroads and the employees in their opening statements at the hearing before the board of arbitration at Chicago on September 30 on the application of the Brotherhood of Locomotive Firemen and Enginemen for increases in the pay of firemen and hostlers on 43 Western railroads approximating $1 per day.

H. A. Scandrett, vice-president of the Union Pacific, in presenting the case for the railroads introduced a statement showing that in recent years the firemen have made greater progress in the matter of wage increases than any other class of train or engine service employee. Their purchasing power, he said, is now greater than when the peak wage scale of 1920 was in effect.

Using a different basis of comparison—conditions in the year 1907—Donald R. Richberg, counsel for the Brotherhood of Locomotive Firemen and Enginemen, declared that the fireman has doubled the value of his services, while his purchasing power has undergone a 10 per cent reduction.

Besides Mr. Richberg, appearances were entered for D. B. Robertson, C. J. Goff and Fred Barr, president and vice-presidents respectively of the Brotherhood. For the carriers appearances were entered for Mr. Scandrett, K. F. Burgess, general solicitor of the Chicago, Burlington & Quincy, and members of the Conference Committee of Managers of the Western Railways. Under the terms of the arbitration agreement it is expected that the final award will not be filed before December 1.

The demands of the firemen were first presented to the managers on July 7 and shortly afterward Edwin P. Morrow, a member of the United States Board of Mediation, was asked to be a party to the conference. An agreement to arbitrate was reached, although it was necessary for the mediation board to pick the two neutral members of the board of six.

The Brotherhood, in the arbitration agreement, asks that existing rates of pay for firemen, helpers, hostlers and outside hostler helpers be increased $1 per day. Growing out of this basic request are the following additional demands:

(1) In freight service on steam, electric or other power weighing 250,000 lb. and over on drivers, and on Mallet engines, existing rates of pay shall be increased $1.25 per day; (2) Gradations of weights of locomotives on drivers to be extended to 550,000 lb. and over in freight service, with an additional increase of 25 cents per day to be applied for each 50,000 lb. above 250,000 lb. The weight on all other power-driven wheels to be added to the weight on drivers; (3) In all passenger service, the earnings from mileage, overtime or other rates applicable, for each day service is performed shall be not less than $6.25 for firemen.

The members of the board, named by the railroads, are, J. W. Higgins, executive secretary of the Association of Western Railways, and R. V. Fletcher, general solicitor of the Illinois Central. The employee arbitrators are S. A. Boone and Albert Phillips, vice-presidents of the Brotherhood. Neutral members of the board are Hazlett P. Burke, chief justice of the Colorado Supreme Court, Denver, and Paul A. Sinsheimer, vice-president of the American Trust Company, San Francisco, Cal. Judge Burke was selected to serve as chairman.

Richberg Opens for Employees

After a lengthly introduction, in which he called attention to the fact that public opinion usually may be heard clamoring for a wage decrease, but almost never asks that wage increases be granted, Mr. Richberg indicated the general course that the employees' testimony would follow. He traced the history of wage awards given to firemen since 1915. His remarks were in part:

"At the outset it must be plain that what we are seeking to find is not what the value of a fireman's serv-

ice is to a particular employer on a particular occasion, but its reasonable values in the market, in exchange for other services. We assume that where the occupational hazard exceeds the normal daily hazard of injury or disease, the compensation of the worker should be increased, both as a reward for dangerous labor and as a protection to himself and to his dependents against premature or eventual disability.

The Fireman's Productivity

"The value of the fireman's service to his employer and to the community has practically doubled, as measured by the productivity of his day's labor, the actual amount of service performed. Today, the firing service necessary to haul twice the tonnage over more miles of tracks in less time, is performed by the same one fireman who produced less than half his service 20 years ago. Yet today the daily wage rate of the locomotive fireman in the western district has less actual purchasing power by 10 per cent than the wage rate of 20 years ago.

"We will prove that during the same period there has been an increase of over 30 per cent in the average wage rate of nearly a million skilled workers whose services cannot be held to have more value than his, or to have increased in value as much as his. And these are the workers whose services he must buy in exchange for his own, in order to enjoy the standard of living prevalent in this country. We will prove in the last 20 years that the standard of living in America has risen steadily; that a rise of 50 per cent in the average scale of living can be reasonably estimated; that the real wealth of the United States has nearly doubled; that the average income per person has increased nearly 50 per cent in purchasing power; yet, in this period of glittering prosperity we find the locomotive fireman doubling the value of his service and receiving a 10 per cent reduction in real wages."

Mr. Richberg described the fireman as the "hardest worked man in train service," who could no longer expect promotion to engineer after two or three years of apprenticeship, but must wait as a fireman for 15 to 20 years.

Scandrett Presents Carriers' Position

Mr. Scandrett, on behalf of the carriers, presented a brief statement in which he said in part:

"It is the view of the railroads that the pay of the firemen is more than adequate at this time. We are not, however, seeking any wage reductions in this proceeding. We think this board should take into consideration the nature of the duties performed by the fireman, the extent of his labor, the hazards of the employment and the responsibility. We also think that this board should give weight and consideration to the history of the adjustments. Beginning with 1915 the firemen have had a series of increases in their wages and, with a single exception, no reductions.

"I have difficulty in recognizing the picture presented of the firemen. For many years the locomotive firemen have been very strongly organized and their leadership has been able, resourceful and aggressive. This has been particularly true in recent years, and the fact is that the firemen's situation in the matter of both wages and working conditions in recent years has improved more than that of any other class of railroad employees.

"With the increases made subsequent to 1921 and 1924, and with the influence of the weight on drivers basis of pay, the firemen at the present time are receiving between 95 and 100 per cent of the peak scale of wages awarded by the Labor Board in 1920. Their purchasing power is very much greater, because since 1920 there has been a very substantial reduction in the cost of living, but their dollar wage now very closely approaches the highest scale of wages that was ever known in this country and their purchasing power at the present time is substantially in excess of what it was when they received that peak scale of wage.

"To an appreciable extent the firemen have themselves restricted the earnings of indivdual firemen by what is known as the Chicago Joint Working Agreement between the Brotherhood of Locomotive Firemen and Enginemen and the Brotherhood of Locomotive Engineers. This agreement prescribes the maximum mileage which may be made by a fireman. In many instances he runs out his mileage in 15 or 20 working days or sometimes even sooner, and if permitted to continue his run he could increase his earnings very substantially and without working unduly long hours.

Drastic reductions in freight rates have seriously curtailed the earning power of the Western carriers, declared Mr. Scandrett. In each year since 1920 they have fallen far short of earning a fair return. Despite these difficulties the railroad employees have not been asked to accept reductions in wages, he said.

Mr. Scandrett also called attention to inroads that automobile competition has made on the passenger revenues of the railroads. In concluding, he declared that since 1921 there have been wage increases in which the firemen have shared to a greater extent than any other class of railroad employee.

Employee Witnesses on Stand

The first witness called by the employees on October 3 was D. B. Robertson, president of the Brotherhood, who explained an exhibit in which were tabulated and compared the wages under the present scale and as they would be distributed under the increase asked. Mr. Robertson emphasized the stringent physical examinations made before employment and the periodical re-examinations after an applicant has entered service, stating that some railroads require an applicant to be a high school graduate.

It was estimated by Mr. Richberg during questioning by members of the board, that 95 per cent of the firemen are members of the Brotherhood and that the total number of firemen in freight service in the Western territory is 25,000, with a total of about 50,000 men in all services affected by this arbitration. In this connection it was stated that approximately 40 per cent of the locomotives operated in the West are fired by mechanical stokers.

Other Testimony

Mr. Robertson called attention to the book of rules adopted by the Traveling Engineers Association as a guide for railroad mechanical departments in preparing examinations for locomotive firemen, although Mr. Scandrett pointed out that in the event the firemen does not aspire to be an engineman he has no need to study the questions contained in the manual. Mr. Robertson also read into the record excerpts from the Union Pacific mechanical examination for firemen and referred to similar sets of questions in use on the Chicago & North Western and on the Atchison, Topeka & Santa Fe to show the amount of study which is required of firemen to fit themselves for promotion. Practically all firemen of a few years' standing are expected to be qualified engineers and in most cases are qualified engineers, declard Mr. Richberg.

An Auto Truck Supply Train Loaded with Track and Station Materials

Auto Trucks Do Supply Train Work on the Southern Pacific

Handling company material on highways among store department operations at West Oakland Plant

By James M. Day
Foreman, Stores Department, Southern Pacific, West Oakland, Calif.

IN the San Francisco Bay district of the Southern Pacific, it was the practice a few years ago for each department to purchase and operate its own trucking equipment. In 1922, an analysis developed the fact that the methods employed could be improved upon. Frequently, trucks of two or more departments were operated in the same zone at the same time, carrying a total load which could be handled with only one machine if properly dispatched. Feeling that consolidation of this trucking would result in greater efficiency, the practice of parceling out the service between three or four different departments was discontinued and the stores department undertook the supervisoin and operation of the consolidated auto truck service for all departments in the district.

The present equipment which the store department uses under this plan at the West Oakland district stores, consists of the following units:

3—2½-ton trucks
1—1½-ton truck
4—1-ton trucks
3—Tractors
7—2-ton four-wheel trailers
3—3-ton four-wheel lumber trailers
12—1-ton two-wheel trailers
70—Two-wheel lumber trailers

The small trucks and the two-wheeled trailers, when used in connection with store delivery of material to the users at the shops and between stores, effect a saving in time and money over the hand drawn carts used before. Two trucks assigned to this service at West Oakland operate on a 30-minute schedule, each taking an assigned route, and making definite stops at definite times. Each machine is equipped with low speed driv-

All Auto Trucks Are Equipped with Standard Bodies

ing gears for power in placing small trailers at various locations in the yards. The trailers are first loaded at the receiving and shipping platform and placed at the various shops and stores for unloading and reloading. These trailers are equipped with a small card holder installed on the frame on which is indicated the time and date the trailer was loaded, also the place where it is to go. In addition to trailers used in this service, small platforms are located at the various stops in convenient locations where supplies can be loaded and unloaded into the trucks to prevent interruption.

Two of the larger trucks and trailers are assigned to transporting commissary and laundry department supplies from the general commissary to the various restaurants, dining cars and markets. This equipment also operates on assigned schedule and covers approximately 30 miles per day, each truck making 12 trips and handling an average of 46 tons per eight-hour day.

Highway Trains Serve 200 Miles

Because of traffic conditions, the operation of auto truck supply trains has proven successful in the interurban districts. These consist of two trains made up of two of the larger trucks and trailers. Each train is assigned to a division and operates two days each month, covering a territory of 200 track miles, delivering supplies and picking up scrap from the following departments:

2—train masters
18—stations
19—sections
5—extra gangs
58—crossing flagmen
13—signal towers
2—signal maintainers
1—bridge and building gang
2—electric sub-stations
2—car repair yards

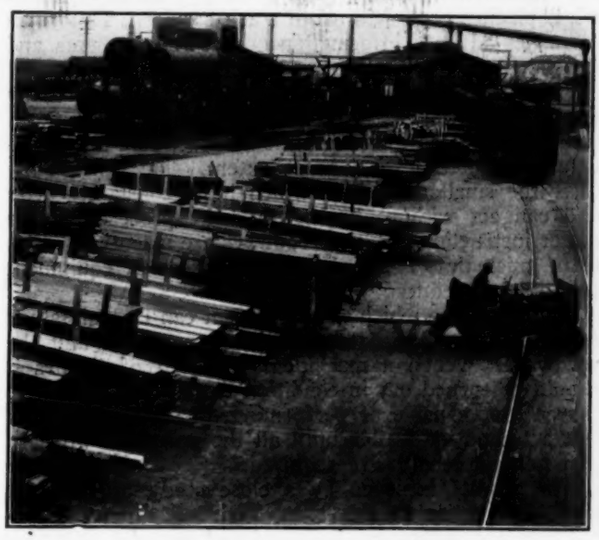
Operating these supply trains with success requires the hearty co-operation of the superintendent and his

Keeping Lumber on Wheels from the Time It Is Taken from Storage Until It Is Ready for Use

forces. A supply train schedule is mailed to the roadmasters, section foremen and all employees concerned at least a week or 10 days before the operation of the train and superintendents are advised by the division storekeeper when the trailers operate over their districts. The superintendent, in turn, notifies the signal supervisor, roadmaster and others interested. They know from this advice and previous experience the approximate hour of the train's arrival, and the section forces are employed around the station repairing passing trucks and doing other necessary work there until the arrival of the train. By working in this manner, the division storekeeper and the truck driver in most cases succeed in completing supply train work by the time the inspection has been completed by the division officers.

Keep Lumber on Wheels

Tractors equipped with an automatic coupling device and hauling two-wheel trailers are used in the wood



A Battery of Trailers with Lumber Ready for Delivery to the Mill Hauled by Tractors Equipped with Automatic Couplings

working mill at West Oakland, where they have increased the output at a decreased cost and have speeded up the operation of the whole plant, making it possible to keep the lumber on wheels from the time the raw material is removed from the yard stock piles until the finished product has been loaded in the car, delivered to shops or returned to store stock. This feature not only eliminates labor costs but eliminates confusion in and around the mill as well and promotes a high standard of efficiency in the handling of lumber.

In addition to the special designed two-wheel trailers used for mill delivery, special four-wheeled trailers are used in handling lumber deliveries in the suburban district and on the highways. These trailers are also used in handling pipe, sheet steel, piling, etc. They were manufactured in the company shops at a small cost from worn-out automobile trucks released by other departments and turned in to stores department as scrap.

Upon assuming the responsibility for all the trucking service when it was co-ordinated, the store department sought a plan of work that would insure the minimum cost and avoid confusion. The plan recognizes the importance

(1) of obtaining modern trucking equipment to meet local requirements,

(2) of providing intelligent supervision,

(3) of providing good roads, and

(4) of maintaining the equipment to a high standard.

Local conditions have been factors in determining the type of equipment installed but the effort has been to keep the quantity of it at a minimum.

The supervisor should be able to handle the service efficiently, make a careful analysis of each load and route intelligently. He must see to it that all trucks

are loaded in the most convenient places and with the least possible delay, are free to move soon after loading and are routed in such a way as to permit delivery to be made with the minimum of delay and without unnecessary mileage. His office should be in a central location, equipped with telephone, with routing charts and schedules governing the operation and location of the various equipment for immediate reference in order that he may know at any given time the exact location of each piece of equipment.

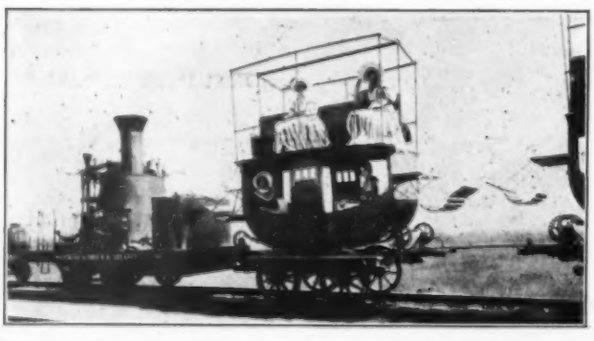
A standard stationery form is used by all departments when placing orders for auto truck service. This form furnishes advance information on the requirements and serves as an important factor in avoiding confusion.

Much also depends upon the men who are actually driving the trucks. Where a driver is intelligent, as well as interested in his job, he can facilitate the movement of material to a great extent. He can readily meet the small difficulties which must constantly arise and can act without having to delay proceedings for minor instructions. Good roadways are essential. With them much time is saved and the upkeep of equipment employed is reduced.

The degree to which the equipment can be maintained depends to a large extent on the supervision and the roadways. When a machine is in need of repairs it should be turned out in condition to render any service it was ever capable of performing, but it is unwise to run a tractor or trailer until all the parts are worn so that general repairs are required.

The results achieved by a close study of the auto trucking service at the West Oakland district stores indicate that money can be saved and material deliveries speeded up on any railroad through careful study and operation of this phase of material distribution which develops low handling costs. It is a problem that has not been studied as closely as some others and in many instances it offers opportunities for improvement.

YOUR WATCH, if it is a suitable one for railroad service, should have 19 jewels. It should be borne in mind that the fly wheel vibrates over 12,000,000 times in one month; therefore it is no wonder that sometimes a watch may be a trifle fast or slow. This, with other interesting data, is given in an article on railroad watch inspection by Charles T. Jenkins, in the New York Central Lines Magazine. Mr. Jenkins represents the Ball Railroad Time Service. He says that the late Webb C. Ball, who was the head of this institution, began his career in the railroad world in consequence of a collision on the Lake Shore & Michigan Southern, about 1891, when an unreliable watch figured in the causes of the collision. Mr. Ball then began the regulation of the use of watches on that road, making a number of improvements in watch mechanisms. Later his work extended to other important roads.



The "Atlantic" with Imlay Coaches at the Iron Horse Fair

Looking Backward

Fifty Years Ago

The board of directors of the Pittsburgh & Lake Erie on September 27 awarded a contract for the construction of a new route between Pittsburgh and Youngstown, Ohio, 68 miles, for the sum of $2,500,000. The road takes the line of the old Pennsylvania and Ohio canal.—*Railroad Gazette,* October 5, 1877.

The Missouri River, Fort Scott & Gulf has offered to reconvey to the United States government a portion of its land grant, the object being to escape the free transportation of mails, troops and government freight, which was a condition of this grant. This action should quiet campaign orators and political newspaper editors who are greatly disturbed in mind about the "robbery of the public domain" for railroad subsidies.—*Railway Age,* October 11, 1877.

The general hunt and scramble after freight cars in which most of the roads of the country have been indulging during the last few weeks in order to supply the demands of the grain traffic illustrate the need of a uniform and general system of recording and reporting car movements. An agreement to charge a certain sum per day for cars when they are detained beyond a reasonable time would correct the habit of switching foreign cars to side tracks for future use.—*Railway Age,* October 11, 1877.

Twenty-Five Years Ago

The Southern Pacific has gone abroad to inquire for 40,000 tons of steel rails. It is estimated that the orders now on the books of the various steel companies aggregate 2,000,000 tons and that it will be impossible to obtain delivery on new rail orders sooner than October, 1903.—*Railway and Engineering Review,* October 11, 1902.

The text of the so-called Elkins bill for the amendment of the Interstate Commerce Act, which has been revised since the last session of Congress when it failed of action, now proposes to confer upon the Interstate Commerce Commission, in cases of alleged unjust or unreasonable rates, the power to prescribe what the rates shall be. This extension of authority of the commission has developed vigorous opposition. Another section of the revised bill proposes to legalize pooling contracts, recognizing such contracts as permissible and legal when made subject to the supervision of the Interstate Commerce Commission.—*Railway Age,* October 10, 1902.

Ten Years Ago

The first locomotive to be constructed on the Pacific coast in more than a quarter of a century has just had its maiden trip over the Southern Pacific from Sacramento, Cal., to Roseburg, Ore., at the head of a troop train. The locomotive was built at the Sacramento shops of the Southern Pacific.—*Railway Review,* October 6, 1917.

Starting with the first Tuesday in October, that day of every week will hereafter be "beefless day" in the dining cars and restaurants of many railroads of the country. This action has been taken at the request of the United States Food Administration as a step in the conservation of the beef supply of the country.—*Railway Age Gazette,* October 5, 1917.

Public grants of land to railways from 1850 to 1871 will, during the present year, save the government approximately $50,000,000 in military transportation charges through a proviso that government property and troops should always be transported at reduced rates, according to an estimate of a transportation officer of the Navy department.—*Railway Age Gazette,* October 5, 1917.

Communications and Books

The Iron Horse Fair—an Appreciation

WASHINGTON, D. C.

TO THE EDITOR:

It was my privilege to visit the "Fair of the Iron Horse" a few days ago, and I feel that I, personally, should like to make some acknowledgment to the Baltimore & Ohio for presenting to the public a unique exhibition. In the first place, the fair was complete when it was opened, and this alone should entitle it to that distinction, but that is not what I mean.

I am a lover of the "Iron Horse" and as such may be a bit prejudiced. Nevertheless, I feel certain that all who have attended the fair will agree with me that it differs as much from the usual exhibition as the living man does from a marble statue.

When I looked at those quaint little engines (all under steam), at Mason's beautiful 8-wheel woodburner, at the typical passenger train of 1863, at the old camel with her hopper and "house" cars, I wasn't at the fair at all. I was standing alongside the B. & O. tracks 50, 75, or more years ago, as the case might be. I could see that Perkins 10-wheeler with her beautifully painted coaches pull out for Harpers Ferry in the stirring war days, and found myself wondering if the "rebs" would let that train get through.

The beautiful condition of the engines, as though they had just left the builder's hands, the costumes of the crews and passengers, all help to make the illusion complete. And I am saying nothing of the other features of the pageant and of the splendid collection of modern motive power and rolling stock which has been brought together, even from across the water, for this occasion. The exhibit of models in the Transportation Building alone would be considered remarkable at any other time.

I sincerely hope that the management of the Baltimore & Ohio will find it possible to keep these fine old engines in some suitable building where they will form a permanent exhibit for the benefit of future generations. Such an exhibit, while lacking the life of the pageant, would still be far ahead of anything in this country.

HUGH G. BOUTELL.

An Engineman's Views on the Crossing-Whistle Problems

TUCSON, Ariz.

TO THE EDITOR:

I have been reading with interest the various letters on crossing whistling, recently published in your columns, but as yet have seen nothing from the man most vitally concerned, the engineer. Most of the writers seem to ignore the point that the train is rightfully on the track and that the automobile has no business there at the same time. One outstanding circumstance is that the engineer may cross a half-dozen streets or highways within a short distance, whereas the automobile passes over only one of those crossings.

Now, as to whistling for crossings. Why whistle at all? This signal, after all, is only a survival of by-gone days. You do not hear the motorist blowing his horn at every street intersection.

After all, it is only a very small percentage of the automobilists who make trouble. The speed maniac, the deaf, the partially blind, and the chance-taker. No amount of whistling will stop the crazy idiot who delights in dashing in front of a train; nor will it make the deaf hear; or improve defective vision.

Whistling has never been proved to have reduced accidents; on the other hand, they are increasing, and this in the face of increased whistling on many roads.

The main function of the whistle is as an emergency warning, and to use it every few minutes for crossings impairs its effect. The same law that requires the engineer to blow for a crossing compels him to blow it when passing a house where possibly some poor human being lies at the point of death.

Now, Mr. Editor, here is my proposition: that all the railroads start a national campaign for uniform state laws. The law should call for a license for every driver, a physical examination, including mentality and two affidavits that the applicant has no bad habits. To this should be added compulsory stopping at all railroad crossings, with a fine for the first offense and jail for the second.

It is the motoring public that must be educated, not the engineer. With all the new appliances on locomotives today, any fair-minded person must agree that we have enough mental exercise already without being further burdened by having to count the seconds for sounding a whistle. I heartily agree with your correspondents who advocate letting the engineer use his own judgment.

We who live on the desert where rattlesnakes abound, observe the law of self-preservation, and are always on the lookout for the serpents, without having to be warned. The public must be educated to keep its eyes open when traveling on the highways without being prompted at every turn. If city councils can control automobiles in the street, surely the government should be able to control them at railroad crossings. Many of the present state laws are simply clubs in the hands of damage suit lawyers.

A railroad that requires the whistle signal to be given twice at each crossing seems to be unconsciously admitting that one signal was not enough and therefore may be sometime morally assuming the responsibility for an accident. Much of the effort at improving matters has done nothing but keep the engineer under a nervous tension, wondering if his whistle will be heeded.

Having myself run my own car a good many years, I feel qualified to speak from both sides of the fence.

CECIL W. RICHARDSON,
Locomotive Engineer, Southern Pacific Company.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Commodore Vanderbilt—An Epic in American Achievement, by Arthur D. Howden Smith. Those who read "A Manifest Destiny" in the booklist of Oct. 2, 1926, will be specially interested in Book 5 "Nicaraguey" of this biography. Books 7-9 contain the story of the railroad system attained by a man "whose ambition was to build up, not to tear down" and who was "always, a fighter: fighting for steamboats, fighting for railroads, fighting for life." (p. 323). 339 p. Pub. by Robert M. McBride & Co., New York City. $5.00.

The Ports of Norfolk, Portsmouth, and Newport News, Va., prepared by the Board of Engineers for Rivers and Harbors, War Dpt., in co-operation with the U. S. Shipping Board. Their Port Series No. 15. "Communications" on pages 183-216 discusses railways, car float—and lighterage facilities, steamships, telegraph, telephone and radio. "The freight-rate situation," p. 217-235. Maps, charts, illustrations. 282 p. Pub. by U. S. Govt. Print. Off., Washington, D. C. $1.15.

Periodical Articles

Americans We Like—Daniel Willard: A Selfish Man, by Donald Kirkley. A sketch of the President of the Baltimore & Ohio Railroad. Nation, September 28, 1927, p. 307-309.

The Coming Age in Aviation, by Commander Richard E. Byrd. An illustrated prophecy. World's Work, October, 1927, p. 600-610.

Productivity of Labor of Locomotive Firemen. Summarized from exhibit in recent arbitration case. Monthly Labor Review, September, 1927, p. 35-36.

Odds and Ends of Railroading

One of our readers nominates as the lineal descendant of the oldest railway family who is now in railway service H. W. Ellicott, treasurer and general purchasing agent of the Northwestern Pacific. Mr. Ellicott is a direct descendant of the Ellicott family whose name was given to the first terminus of the Baltimore & Ohio; he also is a descendant of Philip E. Thomas, the first president of the Baltimore & Ohio.

"Uncle Billy" Crawford of the Gulf, Mobile & Northern claims to have had one of the most distinguished firemen on record. During a recent tour of the South, Billy Sunday, the evangelist, fired for Engineer Crawford, who says that he evidenced experience in handling a scoop before a fire door, regardless of the fact that it has been 30 or 35 years since he was a fireman on the Chicago & North Western, working out of Boone, Iowa.

The employees at the Morris Park, L. I., shops of the Long Island claim to have the best and most intelligent mascot of any railway men in the country. In support of their claim, they offer "Brownie," a dog of no particular pedigree and indeterminable breed. Despite these drawbacks, "Brownie" is the idol of the shops and so much is thought of his intelligence that recently he was permitted to write his own biography for the Long Island magazine.

The yard crews of the Frisco at Monett, Mo., are very proud of their mascot, a cat which has no name. This cat is a veteran of three years' standing and has lost a foot in the service. But, despite her maimed condition, she still takes great delight in riding about the yards on the switch engines or on tank cars. The men at Monett claim that their cat knows when each of the yard crews goes to lunch and that she makes the rounds, either hopping on an engine or car to reach them. Another veteran at Monett is "Old Toby," a mule with 14 years' service to his credit. Toby was retired recently after service on all four of the divisions out of Monett, where he has assisted materially in construction work, widening banks and grading commercial and passing tracks.

A number of descriptions of stirring incidents on railways, which might have been born in the fertile brains of movie scenario writers, have appeared in this department recently. Possibly under the theory that all the excitement is not confined to the rails, the floating equipment department of the railways has now taken a hand and produced one of these thrillers. The Chesapeake & Ohio tug "Alice," which operates between Newport News, Va., and Norfolk on Hampton Roads, was the chief actor in this one. Recently, Captain C. B. Knight sighted a sailboat, upside down, adrift in the Elizabeth River off Craney Island. Approaching closer, he discerned that three figures were clinging to the submerged gunwales of the capsized craft. Lanterns were secured, the scene illuminated, and a thrilling rescue was effected of three boys, ranging in age from 12 to 16 years, who had been clinging to the overturned craft for more than nine hours.

A Canadian Railroad Family With 249 Years of Service

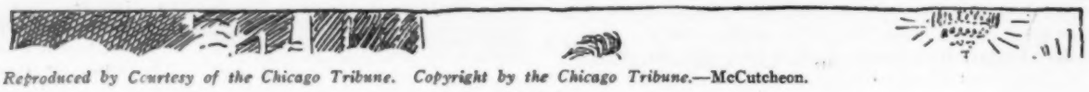
The Canadian Pacific comes to the fore with the following large entry in the railway family contest. The entry from Canada is the Desharnais family, employed on the Alberta district of the Canadian Pacific, whose total service aggregates 249 years. The members of the family follow:

	Years' service
Eugene Desharnais, roadmaster	46
Broxie Desharnais, section foreman	42
George Desharnais, section foreman	40
Arthur Desharnais, trainman	28
Hector Desharnais, trainman	18
Henry Desharnais, section laborer	17
Lucien Desharnais, section foreman	16
Ernest Desharnais, sectionman	15
Jules Desharnais, sectionman	10
Wilfred Desharnais, trucker	7
George Desharnais, checker	7
Reginald Desharnais, timekeeper	3
	249

The first four in the list are brothers. Eugene Desharnais is still working. Broxie Desharnais and George Desharnais have recently been retired, and Arthur Desharnais was killed in a collision in Quebec a few weeks ago. The others are all sons of the four brothers first mentioned.

If you have a rim-side seat at the fight take your radio machine.

The Pullman porters want tipping abolished and their pay raised.



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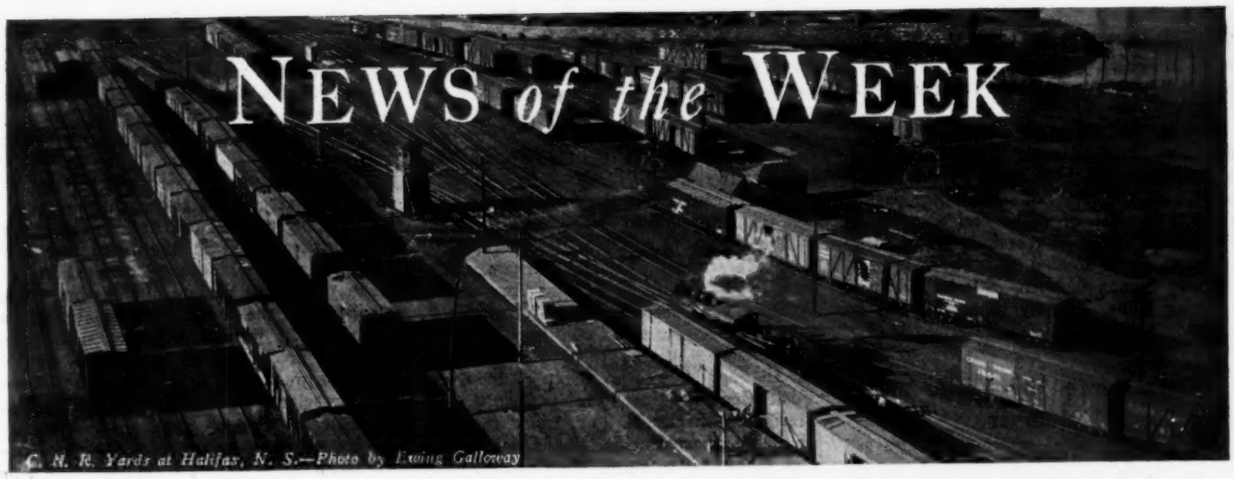
NEWS of the WEEK



C. N. R. Yards at Halifax, N. S.—Photo by Ewing Galloway

THE UNIVERSITY OF ILLINOIS, through its College of Commerce and Business Administration, has introduced a course in the economics of public utilities.

HEARINGS BEFORE a board of arbitration on the demands of Louisville & Nashville signalmen for an increase in wages of 11 cents an hour were begun at Louisville, Ky., on October 3.

PRESIDENT HANNAUER of the Boston & Maine on October 9 will give a "get together dinner" at the Boston City Club, Boston, Mass., for passenger conductors of the railroad. The affair will be similar to one staged last spring at which the station agents were the guests of the president.

AN INCREASE IN WAGES of 2 cents an hour was granted to employees of the Washington, D. C. Terminal Company, in tower and telegraph service, in an award by a board of arbitration on October 1. The award also provides for one relief day with pay each two weeks or overtime pay in lieu of it.

THE NEW ENGLAND RAILROAD CLUB will hold its first meeting of the season at the Copley-Plaza Hotel, Boston, on October 11. C. A. Cotterell, general superintendent of the Canadian Pacific at Vancouver, B. C., will deliver an address on "The Confederation of Canada and the Part Played by the Canadian Pacific Railway."

A MOTION to advance the case in which the United States and the Interstate Commerce Commission are appealing from the decision of a lower court enjoining the Interstate Commerce Commission's valuation of the Kansas City Southern was filed in the Supreme Court of the United States on October 3 by the Solicitor General.

PROPOSED LEGISLATION to amend the consolidation provisions of the Transportation Act was discussed with President Coolidge at the White House on October 1 by Alfred P. Thom, general counsel of the Association of Railway Executives, who said he hoped for the enactment of legislation at the coming session of Congress to provide for voluntary consolidations subject to the approval of the Interstate Commerce Commission.

PRESIDENT COOLIDGE believes, it was stated at the White House on October 4, that the recent suggestion of Edward N. Hurley, former chairman of the Shipping Board, that the railways should engage in the ownership and operation of vessels in foreign trade service, is worthy of careful consideration. The President understands, however, it was said, that there is a difference of opinion as to whether the railroads have or have not legal authority to own such ships.

THE MECHANICAL DIVISION of the American Railway Association has appointed the following representatives to serve on a joint committee composed of representatives of the Engineering, Purchases and Stores and Mechanical divisions to keep in touch with the efforts being made to bring about the passage of the Britton Bill which advocates the establishment of the Metric system of weights and measures by January 1, 1935 (reported in the *Railway Age* of August 27): A. R. Ayers, assistant general manager of the New York, Chicago & St. Louis, A. H. Fetters, mechanical engineer of the Union Pacific, and W. L. Bean, mechanical manager of the New York, New Haven & Hartford.

C. & N. W. Terminal and Transfer

THE CHICAGO & NORTH WESTERN opened several units of its freight terminal, transfer house and classification yard at Proviso, Ill., on its main line 13 miles west of Chicago on October 1. The total area occupied by the project is 1,250 acres. The track capacity is 26,000 cars and the through cars that can be handled per day is 15,000. The transfer house for less-than-carload freight has an area under one roof of 21 acres. Its length is 1,420 ft., its width 630 ft., and it provides for a daily capacity of 700 cars. In addition, there are two repair yards and an icing plant for perishable freight. The cost of the project is $16,000,000. Connections are made with the Baltimore & Ohio Chicago Terminal, the Belt Railway of Chicago, and the Indiana Harbor Belt.

Purchases and Stores Night

The New York Railroad Club at its meeting on Friday evening, October 21, will feature a purchases and stores program. Samuel Porcher, assistant vice-president, Pennsylvania Railroad, will speak on some of the present problems of the purchasing department, and A. L. Sorenson, manager of stores, Erie Railroad, will make a similar address on the problems of the stores department.

Railway Business Association Dinner

It has been decided to hold the annual meeting and dinner of the Railway Business Association on Wednesday, November 16. Business sessions will be held during the morning and afternoon at the Commodore Hotel, New York, and the dinner will be held at the same place in the evening. The subject to be discussed at the morning forum is Future Traffic Growth and Facility Requirements. The speaking program will be published later.

Atlanta Wants Eastern Time

A petition asking the Interstate Commerce Commission to place the city of Atlanta, Ga., in the eastern standard time zone instead of in the central zone, as at present, has been filed with the commission by the Atlanta Chamber of Commerce, the Atlanta Clearing House Association, the Atlanta Traffic Club, and the Atlanta Forward Commission. The petition says that the line dividing Atlanta from eastern time lies just east of the city and that trains leaving for northern, eastern and southeastern points change to eastern time immediately after leaving Atlanta.

California Commission Grants Crossing Permits

A report of the California Railroad Commission for the fiscal year 1926-27 shows that 222 requests for new grade crossings were filed with that organization as compared with the normal number of 60. Of these, 177 were for spur and other tracks applied for by railroad companies and 93 were for crossings for subdivisions.

The commission granted 199 crossing permits, of which 142 were to railroad companies. It also authorized 21 grade separations.

An analysis of grade crossing accidents occurring in California from January 1, 1925, to May 10, 1927, made by the Transportation division of the commission, showed a total of 2,233 accidents on 24 railroads. Those on crossings protected by crossing signs totaled 946; by wigwags, 654; by human flagmen, 290; by overhead crossing signs, 293; by gates, 34, and by crossing bells, 34.

Cars Carded by Letter and Number

The Chicago Terminal division of the Pennsylvania has adopted a system of car carding for that district whereby all cars for delivery in the Chicago district are given a zone letter and an industrial number. A quick glance will enable any yard clerk or trainman to tell at once to just what district the car is destined and the location of the industry for which it is intended.

The zone letter is printed in large black type and there is a space below for the office stamp and date. A book of vest pocket size contains the symbols and all necessary information for carding.

In order to save writing, cards with the printed name of the industry have been furnished for industries, and stations to which a large number of cars are delivered daily.

Canadian Railways to Provide Hotels in Halifax

A definite announcement in regard to the construction of railway hotels at Halifax, N. S., was made on September 28 by the heads of the two major railway companies of Canada.

E. W. Beatty, president of the Canadian Pacific, made the following statement: "Our company has decided to make a substantial contribution towards the building of a new hotel in Halifax. We are subscribing for $350,000 of preferred stock at par value on condition that the bonds of the hotel company and the balance of the preferred stock are underwritten and sold. This is in line with the company's general policy of furthering the development of the community it serves."

The policy of the Canadian National in regard to a hotel at Halifax will not be modified by the above announcement, according to President Sir Henry Thornton, who issued a statement on the same day to the effect that the Canadian National will provide its own hotel accommodation in that city.

Electric Line Men Now Admitted to Freight Officers Association

Electric railway men are now eligible for membership in the American Association of Freight Traffic Officers as a result of a change made in the by-laws of the association at its annual meeting at Chicago on September 29. Those who may become members are freight traffic officers of electric railways that have connections with steam railways, direct interchange of equipment and through rates and prorating arrangements. This change in the by-laws was made because of the close relationship between the officers of the electric and steam railways.

Officers elected for the ensuing year are: President, Archibald Fries, vice-president of the Baltimore & Ohio, Baltimore, Md.; first vice-president, Charles Barham, chairman of the Southern Freight Association, Atlanta, Ga.; second vice-president, E. R. Oliver, vice-president of the Southern, Washington, D. C.; third vice-president, G. H. Ingalls, vice-president of the New York Central, New York; fourth vice-president, Charles R. Fay, traffic manager of the Southern Pacific, New Orleans, La., and secretary-treasurer (re-elected), Jack Gowin, assistant general agent of the Missouri Pacific, the Gulf Coast Lines and the International-Great Northern, Chicago.

Soo Line Strike Off

The threatened strike of train service employees of the Minneapolis, St. Paul & Sault Ste. Marie has been called off, following the adjustment of the differences between the road and the Brotherhood of Railroad Trainmen. The brotherhood served notice on September 22, demanding a satisfactory settlement of its grievances before the following day and threatening drastic measures. The notice charged 17 alleged violations of the labor contract with the railroad. Of these claims, 4 involved interpretations of the Cleveland Compact which is an agreement between the Order of Railway Conductors and the Brotherhood of Railroad Trainmen, to which the railway is not a party but merely acts for the men. In these four cases, the Order of Railway Conductors agrees to the interpretation put on the compact by the railway company while the Brotherhood of Railroad Trainmen does not. It has been the company's position that it is not interested as between the two organizations and is willing to abide by any decision agreed upon between them. Six of the remaining 13 complaints are cases which the railroad agreed to arbitrate in 1926, and which agreement was withdrawn in August and September, 1927, three of which are discipline cases and three involve interpretations of rules. Of the seven remaining complaints, one is a discipline case, five are cases of interpretation of rules, and one is a request for increases in pay for baggagemen helpers.

Of the 17 cases which were the cause of the controversy, some were adjusted at a meeting on September 24 and others were left for final decision by the Board of Mediation.

To Prepare a Manual on the Use of Wood

A manual on the use of wood as a structural material is now being prepared by the National Committee on Wood Utilization for the purpose of developing a complete and authoritative compilation of the principles of engineering and good practice as applied to wood construction. This project is being undertaken in fulfillment of the aims of this committee which was organized under the auspices of the United States Department of Commerce for the purpose of effecting greater economy in the use of the nation's forest resources.

Chief among the abuses which it is desired to overcome are construction practices leading to structural failure and decay and extravagances in the marketing and use of lumber which have resulted in the waste of a large portion of the wood made available in the annual timber cut. The manual will present information on the physical properties of wood the significance of grades and grading rules as affecting the selection of the most suitable class of material of each species for the particular purpose, means of preventing decay, and the general principle of design as applied to wooden structures. This introductory material will be followed by data on the application of wood to various classes of structures classified both as to use and as to type.

The work is under the direction of Axel H. Oxholm, director, and Dudley F. Holtman, assistant director, of the National Committee on Wood Utilization, who are being assisted by a committee of engineers and experts familiar with the requirements of various classes of structures. The committee is also soliciting the co-operation of engineers and architects in offering suggestions and information which have a bearing on structural design in various fields.

Program for Bridge and Building Convention

The American Railway Bridge and Building Association will hold its 37th annual convention at the Nicollet Hotel, Minneapolis, Minn., on October 18-20. The Chicago, Burlington & Quincy will run a special train, leaving Chicago at 8:30 on Monday morning, October 17, arriving at Minneapolis that evening.

The program for the convention is as follows:

TUESDAY MORNING

10:00 a. m. Convention called to order.
Address of welcome: W. H. Bremner, president, Minneapolis & St. Louis, Minneapolis, Minn.
Reply to address of welcome: W. A. McGonagle, president, Duluth, Missabe & Northern, Duluth, Minn., and senior past-president, American Railway Bridge and Building Association.
10:30 a. m. President's address: Elmer T. Howson, western editor, *Railway Age*.
Report of secretary-treasurer.
11:00 a. m. Report of Committee on Recent Developments in Concrete Construction Practices; A. B. Scowden, assistant engineer bridges, Baltimore & Ohio, Cincinnati, Ohio, chairman.

TUESDAY AFTERNOON

2:00 p. m. Report of Committee on Methods of Handling Excavation for Various Types of Foundation Work; H. I. Benjamin, assistant division engineer, Southern Pacific, Portland, Ore., chairman.
2:45 p. m. Address: Control of Emergency Bridge and Building Material Stocks, by U. K. Hall, general supervisor of stores, Union Pacific, Omaha, Neb.
3:30 p. m. Report of Committee on Stock Yards Facilities and Their Maintenance; H. Heiszenbuttel, supervisor bridges and buildings, Chicago & North Western, Norfolk, Neb., chairman.
4:30 p. m. Adjournment to visit exhibit of Bridge and Building Supply Men's Association.

TUESDAY EVENING

6:30 p. m. Informal dinner followed by an illustrated address on "Fighting the Mississippi River Flood," by Clarence R. Knowles, superintendent of water service, Illinois Central, Chicago.

WEDNESDAY MORNING

9:00 a. m. Report of Committee on the Maintenance and Operation of Water Treating Plants; C. E. Brightwell, supervisor water service, Chesapeake & Ohio, Huntington, W. Va., chairman.

10:00 a. m. Address: The Water Supply Problem of the Northwest, by J. W. Porter, special engineer, Western lines, Canadian National, Winnipeg, Man.

10:45 a. m. Report of Committee on Methods of Applying and Repairing Waterproofing on Concrete Structures and Those Features of Design Relating Thereto; T. H. Strate, engineer track elevation, Chicago, Milwaukee & St. Paul, Chicago, chairman.

WEDNESDAY AFTERNOON

2:00 p. m. Report of Committee on the More Uniform Distribution of Bridge and Building Work Throughout the Year; F. P. Gutelius, Jr., division engineer, Delaware & Hudson, Oneonta, N. Y., chairman.

3:00 p. m. Report of Committee on the Relative Merits of Various Materials for Floors on Highway Bridges; John S. Ekey, supervisor structures, Bessemer & Lake Erie, Greenville, Pa., chairman.

4:00 p. m. Adjournment to visit exhibit of the Bridge and Building Supply Men's Association.

WEDNESDAY EVENING

6:30 p. m. Annual dinner of the American Railway Bridge and Building Association and the Bridge and Building Supply Men's Association.

THURSDAY MORNING

9:00 a. m. Report of Committee on the Protection of Men Doing Work Under Traffic; G. S. Crites, division engineer, Baltimore & Ohio, Baltimore, Md., chairman.
Closing business.

Revenues and Expenses for August

The net railway operating income of the Class I railroads in August amounted to $118,226,507 which, for that month, was at an annual rate of return of 4.77 per cent on their property investment, according to reports compiled by the Bureau of Railway Economics. In August, 1926, their net was $132,959,651, or 5.50 per cent. Operating revenues amounted to $557,436,012 compared with $580,257,258 in August, 1926, or a decrease of 3.9 per cent. Operating expenses totaled $393,294,245, a decrease of 1.8 per cent.

Class I railroads in August paid $35,934,315 in taxes. This brought their total tax bill for eight months in 1927 to $253,681,952, a decrease of $2,063,944 or eight-tenths of one per cent.

Fifteen Class I railroads operated at a loss in August, of which six were in the Eastern district, two in the Southern and seven in the Western district.

For the eight months the net railway operating income was $675,223,533, at the annual rate of 4.52 per cent, as compared with $745,528,187, or 5.13 per cent in the corresponding period last year.

Operating revenues for eight months amounted to $4,089,223,817, as compared with $4,172,886,095 during the corresponding period in 1926, or a decrease of 2 per cent. Operating expenses were $3,085,923,288, a decrease of five-tenths of one per cent.

The net railway operating income by districts for eight months, with the percentage of return based on property investment on an annual basis was as follows:

New England Region.....	$27,828,185	4.81%
Great Lakes Region.....	126,433,647	4.88%
Central Eastern Region....	157,234,443	4.92%
Pocahontas Region	55,802,966	8.39%
Total Eastern District...	367,299,241	5.22%
Total Southern District..	90,236,148	4.67%
Northwestern Region	56,818,615	2.99%
Centralwestern Region.....	109,202,077	3.92%
Southwestern Region.....	51,667,452	4.03%
Total Western District..	217,688,144	3.65%
United States.....	675,223,533	4.52%

The rate of return on property investment for the five years ending with the month of August, 1927, has averaged 4.60 per cent.

Class I railroads in the Eastern district for the first eight months in 1927 had a net railway operating income of $367,299,241, at the rate of 5.22 per cent. For the same period in 1926, their net railway operating income was $388,847,930 or 5.68 per cent on their property investment.

Those in the Southern district had a net of $90,236,148, or 4.67 per cent as compared with $105,938,308 or 5.77 per cent last year.

Those in the Western district for eight months in 1927 had a net of $217,688,144 or 3.65 per cent, as compared with $250,741,949, or 4.28 per cent last year.

Division VI A. R. A. Names Committees

Division VI, Purchases and Stores, A. R. A., has completed the selection of subjects for the next convention, and also the personnel of the various committees. Twenty-one committees have been appointed, including a new committee to work with committees of other divisions of the American Railway Association against the adoption of the metric system of measurements and a new committee to report on fundamental plans of organization for materials and supplies. The committee membership, exclusive of the general nominating committee, has been increased to a total of 222 as compared with 184 last year. It includes 15 new chairmen and over 50 railroads are represented.

The committees and the chairman of each are as follows:

No. 1—Stores Department Book of Rules: L. T. Hoffman, traveling storekeeper, U. P.

No. 2—Classification of Material: E. H. Hughes, general storekeeper, K. C. S.

No. 3—Recovery, Repairs and Reclamation of Discarded Material—Classification, Handling and Sale of Scrap: A. L. Prentice, supervisor of scrap and reclamation, N. Y. C.

No. 4—Provisions for Uniform Observance of General Balance Sheet Account 716—Material and Supplies, and Recommendations Governing Charges to Material Store Expenses, Paragraph 16—Special Instructions Operating Expenses: U. K. Hall, general supervisor of stores, U. P.

No. 5—Forest Products: John Foley, assistant to purchasing agent, Penna.

No. 6—Stores Department Buildings and Facilities for Handling Material—(Other than Road Motor Equipment and Auxiliaries Used in Connection with Same): J. L. Sullivan, general traveling storekeeper, U. P.

No. 7—Workable Rules in Connection with the Carrying out of the Provisions of Section 10 of the Clayton Anti-Trust Act: E. A. Clifford, general purchasing agent, C. & N. W.

No. 8—Control of Shop Manufacturing Orders for Stock Material: W. L. Hunker, district storekeeper, C. R. I. & P.

No. 9—Joint Committee on Fuel Conservation, Division VI Representatives: S. Porcher, assistant vice-president, Penna.

No. 10—Control of Material and Supplies Requirements: R. C. Harris, general storekeeper, Penna.

No. 11—Unit Pricing of Materials and Unit Piling: E. D. Toye, general storekeeper, C. N.

No. 12—Purchasing Agent's Office Records and Office Organization, including Price Index of Railroad Commodities: Jas. Deery, assistant to purchasing agent, Penna.

No. 13—Stationery and Printing: V. R. Plank, stationery storekeeper, S. P.

No. 14—Fire Prevention: W. H. Morris, assistant general storekeeper, Reading.

No. 15—Delivery of Material to Users: J. L. Irish, general storekeeper, O. W. R. & N.

No. 16—Standardization and Simplification of Stores Stocks; Disposition of Surplus or Inactive Materials: L. V. Hyatt, supervisor of standardization, M. P.

No. 17—Stores Department Safety Practices: H. W. Concannon, district storekeeper, S. P.

No. 18—Uniform Methods Pertaining to Purchases of Equipment and Large Material Contracts, and Vital Statistics Relating to Purchases: J. L. Bennett, purchasing agent, C. of Ga.

No. 19—Control of Line Stocks: E. H. Polk, district storekeeper, S. P.

The Joint Committee on Metric System comprises J. W. Gerber, general storekeeper, Southern; J. F. Marshall, purchasing agent, C. &. A.; and E. J. Myers, general storekeeper, N. P.

The new committee on Fundamental Plan of Organization for Material and Supplies includes H. C. Pearce, director of purchases and stores, C. & O.; R. C. Vaughan, vice-president, C. N.; H. H. Laughton, assistant to vice-president, Southern; M. J. Wise, assistant to vice-chairman, S. P.; C. D. Young, general purchasing agent, Penna.; and G. W. Bichlmeir, general purchasing agent, U. P.

Along the Atlantic Ocean on the Narrow-Gage Boston, Revere Beach & Lynn

Traffic

Pere Marquette car ferry No. 12 was launched at Manitowoc, Wis., on September 26. The craft is 400 ft. long.

J. E. Taussig, president of the Wabash, and F. H. Thompson, president of the American Farm Bureau Federation, will be the principal speakers at the fourteenth regular meeting of the Midwest Shippers' Advisory Board at Decatur, Ill., on October 12.

The Atlanta, Birmingham & Coast, exhibiting at the Chemical Industries Fair in New York this week, made a handsome display of the mineral resources of the country along its line in Georgia and Alabama, special emphasis being laid on the value of soft water, with which that region is well supplied.

The Interstate Commerce Commission has announced a postponement of the effective date of its order in Consolidated Southwestern Cases, in which it prescribed an extensive revision of class and some commodity rates in the Southwest, from December 5 to February 3. It has also re-opened the case for further hearing pursuant to a petition of the Memphis Freight Bureau, upon the question of rates on riveted pipe.

The Interstate Commerce Commission has denied a petition filed by six railroads serving the Indiana coal district for a reargument, reconsideration and a postponement of the effective date of its recent order reducing rates on bituminous coal from Illinois and Indiana mines in relation to the rates from the southern district. Reconsideration was asked in respect of the rates from the Danville, Brazil-Clinton and Linton-Sullivan groups.

Many of the eastern railroads have filed with the Interstate Commerce Commission protests against its recent order in the New England divisions case increasing the divisions of the New England lines out of rates on coal. The Baltimore & Ohio and the Western Maryland, in a joint protest, say they believe the evidence does not justify any increase in divisions in favor of the New England lines and also that no justification existed for relieving the western and southern carriers from full compliance with the order of March 28, 1922.

The Northern transcontinental lines have filed with the Interstate Commerce Commission an application for a modification of its order of July 20 prescribing a reduction in the rates on deciduous fruits from California to eastern points, by the elimination of the requirement that the rates be reduced when the movement is via North Pacific coast gateways, provided the order is construed to make such requirement. The applicants say they believe the commission in issuing the order was not aware that it would operate to reduce the rates from Washington and Oregon which were not in issue, but that if any changes are to be made in the rates that are important to them they should be made only after hearing and after the rates have been considered on their merits.

The Interior Florida Traffic Bureau has asked the Interstate Commerce Commission to require carriers to publish not later than 60 days from October 1, the class rate scales set forth but not ordered by the Commission in its report in connection with its Southern freight rate investigation. The petition says this investigation was begun over five and one-half years ago and that the shippers have paid millions of dollars in freight based on the old rates which were criticized by the Commission. It is also stated that the carriers of the Southeast are contemplating the cancellation of all l. c. l. commodity rates, all exceptions to the Southern Classification which have local application, and all any-quantity rates and that publication of the class rate scales will not interfere with subsequent consideration of the rates which the carriers desire to have cancelled.

Regional Advisory Boards in October

The Mid-West Shippers Advisory Board will hold its sixth meeting at Decatur, Ill. on October 12. The Northwest Shippers Advisory Board will meet at Crookston, Minn. on October 25.

Allegheny Regional Advisory Board

The Allegheny Regional Advisory Board held its regular meeting at Clarksburg, W. Va., on September 27, with a good attendance. The reports of commodity committees, which were full and satisfactory, presented quite a variety of conditions, which may be summarized as indicating a decrease of five per cent in the traffic of the district as a whole.

Cement, brick, etc., are expected to increase 30 per cent as compared with last year; live stock and other products, nine per cent; petroleum, seven per cent, and canned goods 13 per cent. The iron and steel industry predicts a decrease of five per cent in car loadings; coal and coke a decrease of seven per cent; forest products, five per cent and sand, gravel, slag, etc., eight per cent.

Revised Divisions on Anthracite Coal

Revised divisions of the joint rates on anthracite coal from producing points in Pennsylvania to destinations in Illinois beyond the Chicago switching district were prescribed by the Interstate Commerce Commission in a decision made public on October 4 on a complaint filed by the Erie and the Chicago & Erie. The commission finds that the divisions for the future should be, the applicable arbitraries over Chicago, plus 20 cents per ton, subject to defendant western lines' local rates as maxima to accrue to the western lines, with the remaining portions of the through rates to accrue to the complainants. The roads are expected to establish divisions on this basis for the future and to make adjustments in accordance therewith for the period since February 17, 1926.

Freight Commodity Statistics

The Interstate Commerce Commission has issued its quarterly statement of the freight tonnage transported by Class I steam railways for the quarter ended June 30, 1927. Below will be found a comparison, by general groups of commodities, of the tonnage transported during the second quarter of 1927, with the corresponding period in 1926, also a comparison of the cumulative figures for the periods January 1 to June 30, 1927 and 1926:

Groups of commodities	Number of tons originated: Quarter ended June 30, 1927	Quarter ended June 30, 1926	Per cent of increase 1927 over 1926
Products of agriculture	20,015,092	19,586,463	2.19
Animals and products	6,260,508	6,076,657	3.03
Products of mines	178,779,781	181,962,780	*d* 1.75
Products of forests	25,891,928	27,909,472	*d* 7.23
Manufactures and miscellaneous	78,188,982	77,922,252	.34
All l.c.l. freight	9,834,729	10,046,533	*d* 2.11
Total	318,971,020	323,504,157	*d* 1.40
	Total tons carried		
Products of agriculture	43,338,456	43,190,493	.34
Animals and products	11,446,972	11,220,811	2.02
Products of mines	310,796,439	313,201,807	*d* .77
Products of forests	50,973,111	53,323,303	*d* 4.41
Manufactures and miscellaneous	150,468,786	151,090,663	*d* .41
All l.c.l. freight	16,622,336	17,330,243	*d* 4.08
Total	583,646,100	589,357,320	*d* .97
	Number of tons originated		
Products of agriculture	45,521,148	44,007,857	3.44
Animals and products	12,437,527	12,330,170	.87
Products of mines	344,676,909	327,552,867	5.23
Products of forests	51,479,315	55,101,706	*d* 6.57
Manufactures and miscellaneous	145,866,925	145,818,412	.03
All l.c.l. freight	18,903,438	19,527,607	*d* 3.20
Total	618,885,262	604,338,619	2.41
	Total tons carried		
Products of agriculture	95,757,230	94,406,870	1.43
Animals and products	22,286,667	22,360,271	*d* .33
Products of mines	618,219,973	590,654,346	4.67
Products of forests	99,320,353	103,847,389	*d* 4.36
Manufactures and miscellaneous	281,078,775	282,472,116	*d* .49
All l.c.l. freight	32,059,617	33,468,594	*d* 4.21
Total	1,148,722,615	1,127,209,586	1.91

d Decrease.

Larger, Faster Vessels for Panama Canal Service

On October 1 at Newport News, Va., was launched the S. S. California of the International Mercantile Marine Company, the builder being the Newport News Shipbuilding & Dry Dock Company. The vessel will be placed in New York-San Francisco service via the Panama Canal early in 1928

and is the largest passenger ship ever built in the United States and the largest electrically-driven ship in the world. Two sister vessels are planned.

The California will carry 384 first class passengers and 363 in the tourist class. In addition it will have 478,700 cu. ft. cargo capacity, 100,000 cu. ft. of which will be for refrigerated cargo (equivalent to the cubical capacity of about 50 refrigerator cars). However, of the refrigerated space ⅛ will be reserved for frozen cargo.

The vessel will make the one-way trip from coast to coast, calling at Havana in about two weeks.

N. E. Shippers' Advisory Board

The New England Shippers' Advisory Board held its seventh regular meeting at Hotel Van Ness, Burlington, Vt., on September 23, with chairman W. F. Garcelon in the chair, and an attendance of about 400.

The 50 commodity committees made very full and complete reports setting forth the prospects for business during the remaining three months of the year. In practically all lines the probabilities indicate little change. Increases are expected in building and monumental stone, 10 per cent; live stock, 10 per cent; machinery, 10 per cent and petroleum products, 10 per cent. The only important decrease indicated is in slate, 5 per cent to 15 per cent. The committee on explosives reports that cars furnished to shippers for loading are generally clean; but to illustrate that occasionally a dirty one creeps in, a picture is printed showing where a car, offered for loading on June 16, had in it enough rubbish to fill 10 or 15 ash cans (the ash cans being shown). The lumber committee, in response to inquiries about promptness in unloading, cites numerous cases where large dealers paid no demurrage; in other words, all unloading was done in free time.

The meeting was addressed by H. G. Taylor and W. C. Kendall, representing the American Railway Association.

On the evening of the 22nd, a banquet was given to the members by the Burlington Chamber of Commerce, at which the principal speakers were Colonel E. C. Smith, president of the Central Vermont and Sir Henry W. Thornton, president of the Canadian National.

The B. & M. "Minute Man" Near Belmont, Mass.

Equipment and Supplies

Freight Cars

THE CHICAGO, ST. PAUL, MINNEAPOLIS & OMAHA is inquiring for 250 all steel general service cars, of 50 tons capacity.

THE CHICAGO, SOUTH SHORE & SOUTH BEND has ordered 4 thirty-foot, steel underframe caboose cars, from the American Car & Foundry Company. Inquiry for this equipment was reported in the *Railway Age* of August 20.

Passenger Cars

THE MAINE CENTRAL is inquiring for two baggage and mail cars.

THE PACIFIC ELECTRIC contemplates buying new passenger car equipment, to include 10 light interurban cars.

THE SEABOARD AIR LINE is having two gas-electric rail motor cars and two trailer coaches built at the plant of the St. Louis Car Company: The motor cars are to be equipped with Electro-Motive Company power plants. This is in addition to the 9 gas-electric rail motor cars and 10 trailer coaches ordered from the American Car & Foundry Company and the J. G. Brill Company, as was reported in the *Railway Age* of June 25.

Iron and Steel

THE PENNSYLVANIA is inquiring for 250 tons of steel for two bridges.

THE ATCHISON, TOPEKA & SANTA FE has placed orders for 125,000 tons of rails.

THE BALTIMORE & OHIO is inquiring for 375 tons of steel for a bridge at Cincinnati, Ohio.

THE CHESAPEAKE & OHIO has ordered 20,000 tons of rail from the Illinois Steel Company, 15,000 tons from the Bethlehem Steel Company, and 20,000 tons from the Inland Steel Company.

THE BOSTON & MAINE has ordered 100 tons of steel for a bridge from the Fort Pitt Bridge Works; an order for 225 tons for a bridge, has been given to the McClintic-Marshall Company.

Pennsylvania Places Orders for 1928 Rail Requirements

The Pennsylvania has placed orders for 200,000 tons of steel rails out of the 300,000 tons recently authorized by the board of directors, to be purchased for use in 1928. The distribution of the orders follows:

	Tons
Carnegie Steel Company	60,000
Illinois Steel Company	40,000
Bethlehem Steel Company	87,000
Inland Steel Company	13,000
Total	200,000

The Pennsylvania has reserved the right to increase each order by 50 per cent at any time prior to October 1, 1928, thus covering the full authorization of 300,000 tons which is the largest for any year of the company's history.

New York Central Inquiring for 1928 Rail Requirements

The New York Central is asking for bids until 12 o'clock noon October 14, for the requirements during 1928 of the New York Central Lines of rail and splice bars. Bids are being asked for 130,000 tons of rail with an option on 60,000 tons additional.

Miscellaneous

THE BOSTON & ALBANY has awarded a contract to the Milwaukee Electric Crane & Hoist Company for supplying a 10-ton gantry crane at its Kneeland street yard at Boston, Mass., and a 10-ton gantry crane at its Liberty street yard at Springfield, Mass.

Signaling

THE TOLEDO, PEORIA & WESTERN has ordered from the Union Switch & Signal Company material for a mechanical interlocking plant to be installed near Lomax, Ill.; this machine to have eight working levers.

THE NORFOLK & PORTSMOUTH BELT LINE has ordered from the Union Switch & Signal Company the necessary material for a mechanical interlocking to be installed at the crossing of its line with the Seaboard Air Line at Portsmouth, Va. This installation requires a 12-lever section Saxby & Farmer mechanical interlocking machine, four mechanical high ground signals, necessary ground materials, etc.

THE NASHVILLE, CHATTANOOGA & ST. LOUIS has ordered from the Union Switch & Signal Company material for automatic color light block signals on the double track line between Bridgeport, Ala., and Chattanooga, Tenn. When this equipment is placed in service, the entire main line between Nashville, Tenn., and Atlanta, Ga., will have in operation automatic color light signals of the Union company's manufacture.

THE BOSTON & MAINE has ordered from the Union Switch & Signal Company 19 complete locomotive equipments for use on engines operating over the territory between Boston and Greenfield. The Boston & Maine has also ordered material for the complete installation of an electro-pneumatic interlocking at Tower "H," Somerville, Mass. The layout consists of 30 single switches controlled by type "A1" switch movements, 16 high signals and 25 dwarf signals, all of the color light type. All functions will be controlled by a Model 14 electro-pneumatic interlocking machine having a 43-lever frame with thirty-six working levers as well as seven spare levers.

Supply Trade

William H. Croft, vice-president and a director of the **Magnus Company, Inc.,** Chicago, has also been elected a director of the **National Lead Company.**

The Robert W. Hunt Company, Chicago, has removed its Birmingham, Ala., office from the Alabama Power & Light building to the Bankers Bond building.

Walter H. Bentley has been appointed representative of **Clark Cooper,** manufacturer of the Monarch air locomotive whistle, with headquarters at 843 Washington boulevard, Chicago.

The D. H. Braymer Equipment Company, W. O. W. building, Omaha, Neb., has been appointed representative for Nebraska and western Iowa of the **Roller-Smith Company,** New York.

The **Marion Steam Shovel Company,** Marion, Ohio, has established direct factory branches at Seattle, Wash., and Portland, Ore. **C. H. Allen** is in charge of the former and **H. L. Niles** is in charge of the latter.

J. C. Fitzpatrick has been appointed district manager of sales of the **Chicago Pneumatic Tool Company,** with headquarters at Cleveland, Ohio, to succeed **J. L. Westenhaver,** who has resigned to enter business for himself.

A. H. Deimel has joined the New York office of the **Buda Company,** and will travel the eastern territory as a sales engineer. Mr. Deimel was transferred from the main office at Harvey, Ill., and succeeds N. C. Study, resigned.

W. M. Stearns has been transferred from the central station department of the **General Electric Company** to the general commercial department Schenectady, N. Y., and has been appointed manager of special contracts. He will also act as an assistant to J. G. Barry, vice-president.

The **Canadian Wellman-Seaver-Morgan Company, Ltd.,** Toronto, Ont., has been incorporated by the **Wellman-Seaver-Morgan Company,** Cleveland, Ohio, as an associated company to handle the latter's products in Canada. The main office will be at 307 Reford building, Toronto, and a branch will be located at 808 Drummond building, Montreal, Que.

E. J. Stocking, secretary of the **American Wood Preservers' Association,** has been appointed general sales manager of the **Western Tie & Timber Company,** and the **Kettle River Treating Company,** with headquarters at St. Louis, Mo., effective October 1, succeeding R. A. Calvin, resigned. Mr. Stocking will continue to perform the duties of secretary of the Wood Preservers' Association with office at Chicago, until January 1.

Obituary

Arthur C. Smith, vice-president of the Morden Frog & Crossing Company, died at Elmhurst, Ill., on October 1.

J. W. Faessler, president of the J. Faessler Manufacturing Company, Moberly, Mo., died suddenly on September 22.

Charles F. Quincy, chairman of the board of directors of the Q & C Company, died on October 1, 1927, at his summer home, Center Harbor, N. H., after a prolonged illness. Mr. Quincy was born in Newton, Mass., on July 16, 1856. From 1886 he was in the railroad supply business, first operating as the Dunham Manufacturing Co., and later as the Q & C Company; he was also connected with and active in several other enterprises and was interested in forestry work.

Charles F. Quincy

Trade Publications

PRECAST CONCRETE ROOFS.—A four-page leaflet with the title "The Precast Concrete Roof from the Investment Standpoint" has been issued by the Federal Cement Tile Company, Chicago, in which are set forth some of the arguments in favor of precast concrete roofing tiles or slabs manufactured by that company.

CENTRALIZED TRAFFIC CONTROL.—This is the title of a handsome pamphlet of 50 pages illustrated with full-page colored engravings and bound in stiff boards, which has been issued by the General Railway Signal Company, Rochester, N. Y., describing the train dispatching system recently installed by that company on the Ohio lines of the New York Central between Toledo and Berwick, and which was the subject of an illustrated article in the *Railway Age* of August 20, page 325.

TEXAS CITY TERMINAL.—Plans are being prepared by this company for the reconstruction of a warehouse and dock recently destroyed by fire at Texas City, Tex. The cost of this work is estimated at $200,000.

Foreign

Colombian Government Buys Railways

Bill authorizing the Colombian government to purchase the Santa Marta Railroad, Cucuta-Villamizar Railroad, Cartagena-Calamar, and the section of the railroad built by the Department of Antioquia, between Bolombolo and the Arma river, has been made a law, according to Assistant Trade Commissioner Ellis at Bogota. The government is also authorized to obtain the amount needed from the national budget or negotiate for a loan for the purchase of the various railroads.

Through Service from Calais to Assuan

Railway service between Calais, France, and Assuan, Egypt, will be inaugurated on November 1, according to Commercial Attache Hodgson at Cairo. Passengers on the Simplon Orient Express, one of the famous European trains, upon their arrival at Constantinople will be ferried from Sirkedji, the railway terminus on the European side of the Bosphorus, to Haidar Pasha, on the Asiatic side, where they will again continue their rail travel through Asiatic Turkey. At Eski Chehr, the railway junction for Angora, the train will be divided into two sections, one part going to Angora while the other will continue to Aleppo and Tripoli. At Tripoli the passengers will be transferred to automobiles and conveyed to Haifa, Palestine, where they will resume their rail travel to Assuan. The service will be operated three times a week. The trip from Calais to Assuan will take 120 hours. International sleeping cars and diners will be a part of the equipment.

PURE IRON DURABILITY.—In a 16-page booklet with this title, the American Rolling Mill Company, Middletown, Ohio, sets forth the causes leading to the corrosion of sheet metals, especially galvanized iron and steel, and the methods which have been adopted for protecting the metal. Special reference is made to installations of Armco ingot iron, manufactured by that company, which have shown long service life where corrosive influences were prevalent.

THE TRACKLESS TRAIN.—The Mercury Manufacturing Company, Chicago, has issued three bulletins on its trailers for handling package freight or transporting materials in shops and roundhouses. Supplement to Bulletin A-100 describes the type A-610 trailer which is equipped with a fifth wheel steering arrangement, while the type A-570 trailer, with a self dumping steel body for handling coal ashes, sand or other bulk materials is described in supplement to Bulletin A-125. The Mercury self-coupler which can be applied to any caster-type trailer, is fully described in bulletin M-130. It is said these couplers will function satisfactorily through any angle of approach up to 60 deg.

Construction

ATCHISON, TOPEKA & SANTA FE.—The construction of a bascule type bridge over the Middle river at Middle River, Cal., is contemplated by this company.

ATCHISON, TOPEKA & SANTA FE.—Bids will be received until October 15 for the construction of a four-story reinforced concrete and steel combined recreation center and apprentice school building at Topeka, Kan. Outside dimensions will be 80 ft. by 120 ft. Bids will close on the same date for the construction of a reinforced concrete and steel structure to house the Santa Fe fire department at Topeka. This building will be two stories in height and will have outside dimensions of 50 ft. by 100 ft.

BALTIMORE & OHIO.—A contract has been let to the Pittsburgh-Des Moines Steel Company, of Pittsburgh, Pa., for the construction of a water treating plant at New Castle and New Castle Junction, Pa., which will cost $6,000 and $10,000 respectively. A contract has also been awarded to the Vang Construction Company of Cumberland, Md., for the construction of a bridge at Hamilton, O., to cost $60,000.

CHESAPEAKE & OHIO.—Bids will be received until October 3, for the construction of a water treating plant at Economy, Ind.

CLEVELAND, CINCINNATI, CHICAGO & ST. LOUIS.—A contract has been let to the Woerman Construction Company, St. Louis, Mo., for the construction of a two-story brick service building at St. Louis. The building will have outside dimensions of 74 ft. by 31 ft. and will cost about $16,000.

DETROIT & IRONTON.—This company has applied to the Interstate Commerce Commission for an extension of time from December 31, 1927, to December 31, 1931, in which to complete the construction of its projected line from Durban, Mich., to Malinta, Ohio, under the commission's certificate of August 1, 1924. It is stated that construction work has proceeded with all reasonable despatch but difficulties have been encountered in the acquisition of right of way and on account of a change of the maximum grade to 0.3 instead of 0.4 and 0.5 per cent.

GRAND TRUNK.—The Detroit, Grand Haven & Milwaukee, the Pontiac, Oxford & Northern and the Michigan Air Line, subsidiaries of this company, have filed with the Interstate Commerce Commission a joint application for a certificate authorizing the construction of a terminal transfer or belt line of 6.63 miles, connecting their existing lines at Pontiac, Mich.

GREAT NORTHERN.—Authorization has been given to the engineering department for the construction of a shop for the repair of electric locomotives at Appleyard, Wash. The building, which will be of brick and steel construction and will have outside dimensions of 82 ft. by 204 ft., will be served by four tracks with one drop pit and two traveling cranes of seven and one half tons and 35 tons capacity respectively. Complete cost of the shop is estimated at $95,000. A contract has been let to George H. Moon, Bellingham, Wash., for the construction of a passenger station at Bellingham, to cost about $50,000. A contract for the paving of an area in the vicinity of the Spokane, Wash., freight station has been let to Charles A. Power, Spokane. Along with the reconstruction of platforms and rearrangement of tracks, the expenditure at this point is expected to approximate $60,000.

MICHIGAN CENTRAL.—This company, the Grand Trunk Western and the city of Detroit have prepared plans for the depression of tracks and the elevation of a street, involving the construction of a steel and concrete highway bridge, at Joseph Campau avenue, Detroit, as part of the general program of grade separation in that city. This portion of the work is estimated to involve an expenditure of $789,000.

MISSOURI & NORTH ARKANSAS.—Plans have been prepared for the reconstruction of a 300-ft. draw span in the bridge over the White river near Georgetown, Ark.

MISSOURI PACIFIC.—A contract has been awarded to Fairbanks, Morse & Co., Chicago, for the construction of a 400-ton reinforced concrete mechanically operated coaling station at Gurdon, Ark.

NEW YORK CENTRAL.—This company has awarded a contract to the M. A. Long Company, Baltimore, for the furnishing and installing of wheat cleaning machinery in its grain elevator at Weehawken, N. J.

NEW YORK, NEW HAVEN & HARTFORD.—A contract has been awarded to C. B. Lindholm, of Pittsfield, Mass., for the construction of a steel bridge on the line of this road at West Hoosatonic street, Pittsfield. The city of Pittsfield desired the widening of the street at that point where it passes under the railroad near the passenger station. The estimated cost of $55,000 will be shared by the city, the county and the railroad.

PENNSYLVANIA.—A contract has been let to the Kelley-Atkinson Company of Chicago for the erection of superstructure on the Forty-seventh street bridge, Chicago. A contract has also been awarded to Sinclair & Grigg of Philadelphia, Pa., for the construction of a bridge to eliminate the Mannheim Pike grade crossing at Lancaster, Pa., which will cost $40,000. Sinclair & Grigg have also been awarded a contract for the installation of a steam line from the tidewater terminal power plant to the perishable products terminal building at Philadelphia which will cost $50,000. A contract has been let to the Mellon Construction Company of Chicago for the laying of track on a change of line from Collinsville to St. Jacob, Ill., at a cost of $100,000. The Tunstall-Johnson Company, of Norfolk, Va., has been awarded a contract for grading and track work from North Junction to Camden Heights and for the Julian avenue and Little Creek yards in connection with the Little Creek improvements. This work is at Norfolk, and will cost $300,000.

PERE MARQUETTE.—This company has applied to the Interstate Commerce Commission for a certificate authorizing the construction of an extension from Wixon to Pontiac, Mich., 17.4 miles, and a belt line around the northerly and easterly sides of the city of Pontiac, approximately 7 miles, connecting with it, as "part of a general plan to construct a line of railroad forming a cut-off from Grand Junction to Woodbury," 63 miles, and an extension from Green Oak to Lenox, 57 miles, to be constructed at some future date. The application says the proposed construction will reduce expenses through a material lessening of the distance via its lines between Chicago and Buffalo and the elimination of limiting grades and will permit the company to avoid passing through traffic within the terminals of the city of Detroit in addition to providing service to additional territory.

SEABOARD AIR LINE.—This road has let a contract to the C. V. York Company of Raleigh, N. C., for the construction of a new passenger station at Arcadia, Fla., which will be a hollow tile and stucco building of Spanish architecture. In addition to usual waiting rooms, office, and baggage room, there will be an open loggia 20 ft. by 34 ft., 210 lin. ft. of butterfly shed, passenger landings, and driveway. The overall dimensions of the passenger station will be 34 ft. by 81 ft. Plans are also being made for a combination passenger and freight station at Dade City, Fla., to be 30 ft. by 150 ft. overall. This building will be constructed of hollow tile and stucco and will be of Spanish architecture. The station will have the regular rooms and offices, together with a freight room 30 ft. by 45 ft., and a covered platform 20 ft. by 37 ft.

C. N. R. Plans New Terminal in Montreal

An order-in-council has been issued by the Canadian government authorizing the Canadian National to expropriate lands necessary for the construction of a new passenger terminal in Montreal. The road now has two main stations in the city, i.e. Bonaventure and La Gauchtière, of which the former is, in volume of traffic handled, by far the more important. The latter is familiarly known as the "Tunnel Terminal" and is located at the end of the former Canadian Northern's electrified tunnel under Mount Royal.

Bonaventure station, which handles the bulk of C.N.R. Montreal business, is an old structure and is reached by lines which have many highway crossings at grade. The company's plans, about which nothing specific has yet been made public, contemplate, apparently, the abandonment of Bonaventure altogether and the development of a large new station at the present site of the Tunnel Terminal. This would involve the abandonment of trackage with a large number of grade crossings and the acquisition of a new right-of-way from the south and west to the new terminal site—now reached by rail only from the north via the Mount Royal tunnel.

Railway Finance

ATCHISON, TOPEKA & SANTA FE.—*New Director.*—General James G. Harbord, president of the Radio Corporation of America, has been elected a director succeeding Ogden Mills, resigned.

BALTIMORE & OHIO.—*Protest Against Tentative Valuation.*—This company has filed with the Interstate Commerce Commission its protest against the Interstate Commerce Commission's tentative valuation of its properties as of 1918, in which the Commission found a final value of $579,579,283 for the carrier property used. The company claims a total of $740,285,628 for cost of reproduction new, as against the commission's figure of $560,378,022, and whereas the report estimates depreciation at $123,245,562, the company claims it should not have been more than $31,524,550 and against this it makes a claim of $22,535,150 for appreciation.

CENTRAL OF GEORGIA.—*Bonds.*—The Interstate Commerce Commission has authorized the authentication and delivery of $2,850,000 of refunding and general mortgage 5 per cent bonds, to be held in the treasury subject to further order.

CHESAPEAKE & OHIO.—*Argument on Merger Plan.*—Oral argument before the Interstate Commerce Commission on this company's applications for authority to acquire stock control of the Erie and Pere Marquette and to issue additional capital stock has been assigned for November 1 and 2 at Washington.

CHICAGO & NORTH WESTERN.—*Equipment Trust.*—This company has applied to the Interstate Commerce Commission for authority for an issue of $2,745,000 of 4½ per cent equipment trust certificates.

CHICAGO, MILWAUKEE & ST. PAUL.—*Tentative Valuation.*—The Interstate Commerce Commission on October 1 made public its tentative valuation report covering the property of this company as of 1918, the last of the tentative reports to be issued covering the larger railroad systems. The final value for rate-making purposes of the property owned and used for common-carrier purposes was placed at $558,300,000, while that of the used property was placed at $558,801,596. The outstanding capitalization as of valuation date was $613,990,054, and the book investment in road and equipment was $605,009,299. With readjustments required by the accounting examination, the report says, this would be reduced to $597,647,177. The cost of reproduction new, exclusive of land, was stated as $562,869,362, and the cost of reproduction less depreciation as $451,139,979. In addition to the carrier property, the company held $42,802,651 par value of securities of or other investments in other companies, recorded in its accounts at $39,719,129 book value classified as noncarrier property.

CHICAGO, MILWAUKEE, ST. PAUL & PACIFIC.—*Argument on Reorganization Plan.*—Oral argument was heard by the Interstate Commerce Commission on Sept. 29 on this company's application for authority to take over and operate the properties of the Chicago, Milwaukee & St. Paul and to issue its new securities in accordance with the reorganization plan, thus terminating the receivership. The new company was represented by Robert T. Swaine, who took the position that, while the commission has jurisdiction to determine whether the application is in the public interest, the questions as to the relative treatment of different classes of securities in the plan have been finally decided by the courts. Arguments in support of the application also were presented by George W. Murray, representing the preferred stockholders' committee, William Church Osborn, representing the Iselin stockholders' committee, and Elihu Root, Jr., representing the Roosevelt bondholders' committee, while the only opposition to the plan was presented by Henry W. Anderson, representing the Jameson bondholders' committee.

D. H. Grady, special attorney for the state of Wisconsin, asked the commission to withhold any approval of the plan until the receivers have abrogated a contract with the Montana Power Company for electric power for the electrified section. Mr. Swaine said that the new company has, under the court decree, a year in which to elect whether it will adopt the contracts of the old company.

Much of the argument was devoted to the objections made by the Jameson committee, as to which Mr. Swaine said: "Mr. Jameson's present proposal to freeze out the stockholders in the reorganization, the last of a series of plans put forward by Mr. Jameson in the course of his opposition to the reorganization, no two of which were alike, is a desperate last minute attempt to break up the reorganization, after two years of litigation in the courts have proved unsuccessful." He said the activities of the committee are in aid of a speculation in the junior bonds of the company. Mr. Anderson declared that the plan is unsound and contrary to the "principles of the transportation act," under which, he said, money invested in railroads goes into a public trust within the control of the commission. He suggested a plan providing for $218,342,960 of undisturbed liens and $25,000,000 of new bonds, or only 34 per cent bonded debt, leaving 66 per cent, on an assumed valuation of $700,000,000, as a "balance of equity to be capitalized according to the principles of the transportation act." He said the plan proposes 67 per cent bonded debt and 33 per cent stock, but Mr. Swaine declared that it provides for only 40.7 per cent of fixed interest-bearing debt, making allowance for the contingent-interest adjustment bonds.

A reply brief filed by the new company, says that it is "confident that while the commission will be jealous within its jurisdiction to prevent ruthless injustice by majorities to minorities, it will be equally jealous to avoid being made the tool of reckless minorities seeking to impose their will upon overwhelming majorities, and confident also that while the commission will be jealous to exercise the jurisdiction conferred upon it by Congress 'in the public interest,' it will be equally jealous to preserve the separation of powers inherent in American constitutional government and will not assume the new role of an omnipotent dictator of the private financial transactions of American railroad security holders *inter se*, to which the orderly decision of the courts are of not the slightest concern."

"The applicant has no desire, and has not attempted, to limit the jurisdiction of the commission or to withhold from the commission's determination any question properly before it. Nothing which the courts have decided or could decide interferes in the slightest with the commission's power and duty to determine whether the acquisition of the St. Paul railroad by the applicant and the issue of the new securities in payment for the property so acquired are in the public interest. All that the courts have decided is that, if such acquisition and the issue of such new securities are in the public interest, then the plan for the distribution of such new securities to the old security holders, after they are issued for the property acquired, fairly and equitably recognizes their respective priorities and rights. The applicant submits that this question is no longer in the case."

GRAYSONIA, NASHVILLE & ASHDOWN.—*Sale.*—The Ideal Portland Cement Company, Denver, Colo., has purchased this road which operates between Nashville, Ark., and Ashdown, to serve a plant which the cement company is building at White Cliffs.

HOBOKEN MANUFACTURERS.—*Sold.*—The War Department has sold its stock of the Hoboken Manufacturers' Railroad, acquired in 1917, to W. L. Diener of New York, for $937,657 cash.

LOUISVILLE & NASHVILLE.—*Abandonment.*—The Interstate Commerce Commission has issued a certificate authorizing this company to abandon a portion of its Acton branch from a point near Helena to the end of the branch at Acton, Shelby County, Ala., 5.93 miles.

MISSOURI PACIFIC.—*Bonds.*—The Interstate Commerce Commission has granted authority to this company to procure the authentication and delivery of $18,994,500 of first and refunding mortgage 5 per cent bonds, series F, $12,000,000 thereof to be pledged and repledged from time to time as collateral security for short term notes, and the remaining $6,994,500 to be held in the treasury subject to further order.

OLD COLONY.—*To Issue New Stock.*—A special meeting of stockholders of the Old Colony will be held October 13 to act upon the question of issuing new stock to pay the cost of additions and improvements to property made by the New York, New Haven & Hartford under lease. The amount of new stock to be authorized is

9,274 shares. If the issue is approved by the Massachusetts Department of Public Utilities and the Interstate Commerce Commission, it will probably be offered at auction, as was the recent issue of 8,917 shares which was sold to Hornblower & Weeks under an arrangement with the New Haven by which the latter subsequently acquired the shares.

SOUTHERN.—*Abandonment.*—This company has applied to the Interstate Commerce Commission for a reconsideration of its recent decision denying the company's application for authority to abandon its line between Morristown, Tenn., and Corryton, but without prejudice to its renewal after two years. After referring to the cost of operating the line, the petition says that if, after reconsideration, the commission should still be of opinion that it should continue to operate it for two years, it should be permitted to choose the means of transportation and to substitute truck service for the service now furnished if it finds that such service will result in material reduction in the loss incurred in the operation of the line.

Average Price of Stocks and Bonds

	Oct. 5	Last week	Last year
Average price of 20 representative railway stocks.	122.68	119.22	100.15
Average price of 20 representative railway bonds.	95.66	95.23	90.80

Dividends Declared

Atchison, Topeka & Santa Fe.—Common, $1.75, quarterly; common, 75 cents, extra, both payable December 1 to holders of record October 28.

Baltimore & Ohio.—Common, 1½ per cent, quarterly; preferred, 1 per cent, quarterly, both payable December 1 to holders of record October 15.

Cincinnati, Sandusky & Cleveland.—Preferred, 1½ per cent, quarterly, payable November 1 to holders of record October 26.

Delaware, Lackawanna & Western.—$1.50, quarterly, payable October 20 to holders of record October 8.

Pennsylvania Company.—1½ per cent, quarterly, payable September 30 to holders of record September 28.

Pittsburgh & West Virginia.—1½ per cent, quarterly, payable October 31 to holders of record October 15.

Porto Rico Railways.—Common, 2 per cent, payable October 1 to holders of record September 15.

Reading Company.—Common, 2 per cent, quarterly, payable November 10 to holders of record October 13.

Valuation Reports

The Interstate Commerce Commission has issued valuation reports finding the final value for rate-making purposes of the property owned and used for common-carrier purposes, as of the respective valuation dates, as follows:

Final Reports

Etna & Montrose	$195,000	1918
Texas South-Eastern	411,700	1919
Rutland	21,025,000	1917
Colorado & Wyoming	3,316,423	1918
Union Terminal (Dallas)	4,402,300	1917
Pacific & Idaho Northern	2,167,562	1916
Arkansas Harbor Terminal	232,900	1919
Lake Superior Terminal & Transfer of Wisconsin	723,000	1917
Peoria Railway Terminal	1,156,000	1916
Cambria & Indiana	3,965,000	1918
Illinois Terminal	1,204,030	1919

Tentative Reports

Brooklyn Eastern District Terminal	$64,449	1919
Chicago, Milwaukee & St. Paul	$558,300,000	1918

Railway Officers

Executive

Samuel S. Walker has been elected president of the Joliet & Chicago, now under lease to the Chicago & Alton, with headquarters at New York.

Operating

Phares W. Boyd has been appointed assistant trainmaster of the Maryland division of the Pennsylvania, succeeding **George B. Minnick,** retired.

C. J. Kavanagh, trainmaster on the Northern division of the Chicago Great Western, with headquarters at St. Paul, Minn., has been promoted to superintendent of the Northern division, with headquarters at the same point. Mr. Kavanagh succeeds **S. V. Rowland** who has been transferred to the Eastern division, with headquarters at Chicago, replacing **T. A. Sweeney** who has been appointed assistant to the general manager, with headquarters in the same city.

F. G. Swafford, superintendent of the Indiana Harbor Belt, with headquarters at Gibson, Ind., has been appointed general superintendent, with headquarters at the same point and jurisdiction over the transportation, motive power and car departments. **C. E. Hinchman,** superintendent of transportation, with headquarters at Gibson, has been appointed superintendent to succeed Mr. Swafford. The positions of general manager and superintendent of transportation have been abolished. **C. L. Kinsey** has been appointed superintendent of car service, with headquarters at Gibson.

C. S. Cannon, assistant superintendent of the Seaboard Air Line, has been appointed assistant superintendent and trainmaster of the North Florida division, with headquarters at Tampa, Fla. **A. L. Pritchett,** trainmaster, has been transferred in the same capacity to the East Carolina division, with headquarters at Charleston, S. C., succeeding **W. W. Shoemaker,** transferred. **J. S. Riggan** has been appointed chief dispatcher of the Virginia division, with headquarters at Raleigh, N. C., succeeding **R. C. Watkins,** transferred. **R. M. Brewer** has been appointed chief dispatcher of the Georgia division, with headquarters at Atlanta, Ga., succeeding **C. M. Lanham,** transferred.

H. W. Hamm, who retired as superintendent of the Centerville division of the Chicago, Burlington & Quincy, with headquarters at Centerville, Iowa, on October 1, was born on August 22, 1862, at Barry, Ill. He entered railway service at the age of 18 years as a telegraph operator on the Wabash at Hannibal, Mo., becoming a telegraph operator on the Burlington in 1882. In 1883 Mr. Hamm was promoted to dispatcher at Brookfield, Mo., and in 1895 he was advanced to chief dispatcher. He served for the next 11 years as chief dispatcher and he was then promoted to trainmaster on the Burlington, with headquarters at St. Joseph, Mo. Two years later, in 1908, Mr. Hamm was promoted to superintendent of the Centerville division, with headquarters at Centerville, a position he held continuously until his retirement on October 1 after 45 years in the service of the Burlington and 19 years as superintendent at Centerville.

Traffic

Stephen T. Stackpole, who has been promoted to general agent of the Pennsylvania, with headquarters at Detroit, Mich., was born at Hamilton, N. Y., on October 14, 1885. After graduating from Harvard University, Mr. Stackpole entered the service of the Pennsylvania on December 12, 1907, as a clerk at Baltimore, Md. The following year he was transferred to the office of the general freight agent at Philadelphia, Pa., becoming freight solicitor at York, Pa., on September 6, 1910. On March 16, 1914, he was promoted to Canadian freight agent, with headquarters at Toronto, Ont., where he remained until December 1, 1916, when he was appointed to the newly created position of assistant foreign freight agent at New York. From June 1, 1917, to November 1, 1925, Mr. Stackpole was advanced successively to acting division freight agent at Baltimore and division freight agent at Baltimore, then serving in the latter capacity at Buffalo and Detroit. In November, 1925, he was promoted to assistant general freight agent, with headquarters at Detroit, becoming general freight agent at that point on April, 1, 1927, a position he held until his further promotion to general agent at Detroit on October 1.

Stephen T. Stackpole

A. C. Hedlund, general agent in the passenger department of the Southern Pacific, with headquarters at Chicago.

has been appointed general agent in the freight department, with headquarters at the same point, succeeding **John J. Grogan,** who resigned on October 1 to accept service with another company.

Walter B. Wells, general agent for the St. Louis-San Francisco at Chicago, has been promoted to assistant freight traffic manager in charge of solicitation on the Frisco lines, with headquarters at St. Louis, Mo. **Henry F. Sanborn,** assistant to the vice-president in charge of traffic at St. Louis, has been appointed general agent at Chicago to succeed Mr. Wells.

Albert H. Seaver, general passenger agent of the New England Steamship Company (a subsidiary of the New York, New Haven & Hartford), with headquarters at New York, has been appointed assistant passenger traffic manager of the New York, New Haven & Hartford, with headquarters at Boston, Mass., succeeding **E. L. Wilson,** deceased. **W. P. Read,** general passenger agent of the New Haven, with headquarters at New Haven, Conn., has had his jurisdiction extended to include the New England Steamship Company's lines.

J. H. McCabe and **R. M. G. Merrick,** general freight agents of the Atchison, Topeka & Santa Fe, with headquarters at Chicago and Topeka, Kan., respectively, have been promoted to assistant freight traffic managers, each having his headquarters at the same point as before. **R. G. Nicholson** and **J. C. Burnett,** assistant general freight agents, with headquarters at Chicago and Topeka, have been promoted to succeed Mr. McCabe and Mr. Merrick, each maintaining his headquarters in the same city as before. **C. E. Hattel,** chief clerk in the general freight office at Chicago, has been promoted to succeed Mr. Nicholson as assistant general freight agent.

Engineering, Maintenance of Way and Signaling

W. A. Murray, engineer of track of the New York Central, Lines Buffalo and East, exterior zone, with headquarters at New York, has been appointed engineer maintenance of way, Buffalo and East, exterior zone, with the same headquarters, succeeding **J. V. Neubert,** promoted. **S. E. Armstrong,** division engineer of the River division, with headquarters at Weehawken, N. J., has been appointed engineer of standards, reporting to R. E. Dougherty. **G. N. Edmondson,** division engineer of the Mohawk division, with headquarters at Albany, N. Y., has been appointed engineer of track, exterior zone, of the New York Central and the Ottawa & New York, with headquarters at New York, succeeding Mr. Murray. **A. R. Jones,** division engineer of the Pennsylvania division at Jersey Shore, Pa., has been transferred in the same capacity to the Mohawk division, with headquarters at Albany. **S. A. Seely,** division engineer of the Adirondack & Ottawa divisions at Utica, N. Y., has been transferred as division engineer to the Pennsylvania division at Jersey Shore, Pa. **J. N. Grim,** supervisor of track, with headquarters at Remsen, N. Y., has been appointed division engineer of the Adirondack & Ottawa divisions at Utica, N. Y. **J. W. Stevens,** division engineer of the Rochester division, with headquarters at Rochester, N. Y., has been transferred in the same capacity to the River division at Weehawken, N. J. **J. H. Kelly,** supervisor of track at Clearfield, Pa., has been appointed division engineer of the Rochester division, with headquarters at Rochester, N. Y.

J. V. Neubert, engineer maintenance of way of the New York Central, Lines Buffalo and East, exterior zone, with headquarters at New York, has been appointed chief engineer maintenance of way of the New York Central. Mr. Neubert was born in Kittanning, Pa., and was graduated from Pennsylvania State College in 1899. He entered railway service on July 3, 1899, as a clerk on the New York Central & Hudson

J. V. Neubert

River (now a part of the New York Central). Until September 1, 1900, he served in the engineering department as chainman, rodman and inspector. He then became assistant supervisor of track, which position he held until May 1, 1902, when he was appointed supervisor of track. From January 1, 1903, until April 1, 1907, Mr. Neubert served as assistant engineer in the division engineer's office, and on the latter date became division engineer at Albany, N. Y., which position he held until April, 1909. He was then appointed engineer of track, Lines East of Buffalo, exterior zone, and in July, 1920, was advanced to engineer maintenance of way of the same lines at New York, which position he was holding at the time of his recent appointment as chief engineer maintenance of way of the Lines East and West and the Ohio Central Lines.

Mechanical

G. P. Trachta, master mechanic of the Chicago, Burlington & Quincy, with headquarters at Omaha, Neb., has been transferred to the Galesburg division, with headquarters to be at Galesburg, Ill.

W. T. Abington, master mechanic of the Little Rock division of the Missouri Pacific, with headquarters at McGehee, Ark., has been transferred to the Southern Kansas division, with headquarters at Coffeyville, Kan., succeeding **C. R. Kilbury** who has been transferred to the Omaha and Northern Kansas divisions, with headquarters at Falls City, Neb. Mr. Kilbury succeeds **G. T. Callender** who has been transferred to the Eastern division, with headquarters at Jefferson City, Mo., to replace **D. W. Cunningham** who resigned on October 1.

Obituary

C. Yoder, engineer of maintenance of way of the lines west of Buffalo of the New York Central, died from heart trouble on September 28 at Cleveland, Ohio.

Herbert Rose, assistant auditor of freight receipts of the Northern Pacific, with headquarters at St. Paul, Minn., died on September 24 at the Northern Pacific hospital, St. Paul, following an operation for appendicitis.

Festus J. Wade, receiver of the Missouri & North Arkansas from 1916 to 1920 and since 1899 president of the Mercantile Trust Company of St. Louis, died on September 28 in that city from pneumonia following an illness since August 9 when he underwent an operation for cancer of the throat. In addition to his service as receiver of the M. & N. A. Mr. Wade acted during 1918 as a member of the advisory committee of the finance section of the Division of Finance and Purchases of the United States Railroad Administration. At the time of his death he was a director of the Chicago & Alton, the Cleveland, Cincinnati, Chicago & St. Louis and also of the St. Louis-San Francisco.

John A. Robinson, auditor of the Cincinnati, New Orleans & Texas Pacific, (part of the Southern), with headquarters at Cincinnati, O., died in that city of September 21. Mr. Robinson was born on May 28, 1872, at Jackson county, Ala., and entered railway service on September 1, 1889. Until June, 1899, he served as clerk in the accounting department of the Southern, and from the latter date until May, 1901, was assistant chief clerk in the freight accounting department. Mr. Robinson then became chief clerk in the same department, which position he held until July, 1907, when he was appointed auditor of freight accounts. From August, 1914, until August, 1918, he served as auditor of revenue, and from the latter date until February, 1919, was assistant auditor. In February, 1919, Mr. Robinson was appointed auditor of the Cincinnati, New Orleans & Texas Pacific, with headquarters at Cincinnati, which position he was holding at the time of his death.